TRANSCRIPT OF PROCEEDINGS

PROPOSED RULE: Diesel Particulate Matter Exposure of Underground Metal and Nonmetal Miners

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MINE SAFETY AND HEALTH ADMINISTRATION

PUBLIC HEARING

PROPOSED RULE: Diesel Particulate Matter Exposure of Underground Metal and Nonmetal Miners

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I N D E X

P R O C E E D I N G

(8:35 a.m.)

MR. TOMB: Good morning. I have an opening statement that I'd like to read into the record before we start.

My name is Thomas Tomb. I am the Chief, Dust Division of the Pittsburgh Health Technology Center, in Pittsburgh, Pennsylvania. I will be the moderator for this public hearing on MSHA's proposed rule addressing diesel particulate matter exposure of underground metal and nonmetal miners.

Personally, and on behalf of Assistant Secretary J. Davitt McAteer, I would like to take this opportunity to express our appreciation to each of you for being here today and for participating in the development of this rule. With me on the panel today from MSHA are: Jon Kogut, from the Office of Program Evaluation and Information Resources; George Saseen, from Technical Support; Sandra Wesdock, from the Office of the Solicitor; Pete Turcic, from the Metal and Nonmetal Safety and Health and Pamela King, from the Office of Standards, Regulations and Variances.

This hearing is being held in accordance with Section 101 of the Federal Mine and Safety and Health

Act of 1997. As is the practice of this Agency, formal rules of evidence will not apply.

We are making a verbatim transcript of this hearing. It will be made an official part of this rulemaking record. The hearing transcript, along with all of the comments that MSHA has received to date on the proposed rule, will be available to you for review. If you want to get a copy of the hearing transcript for your own use, however, you must make the arrangements with the reporter.

We value your comments. MSHA will accept written comment and other data from anyone, including those of you who do not present an oral statement. You may submit written comments to Pamela King, who is on the panel here, during this hearing or send them to Carol Jones, Acting Director, Office of Standards, Regulations and Variances, at the address you have listed in the hearing notice. We will include them in the rulemaking record. If you feel you need to modify your comments or wish to submit additional comments following this hearing, the record will stay open until July 26, 1999. You are encouraged to submit to MSHA a copy of your comments on computer disk, if possible.

Your comments are essential in helping MSHA

develop the most appropriate rule that fosters safety and health in our Nation's mines. We appreciate your views on this rulemaking and assure you that your comments, whether written or oral, will be considered by MSHA in finalizing this rule.

In April 1998, MSHA published a proposed rule to address exposure to diesel particulate matter in underground coal mines. Hearings were held in 1998 and the rulemaking record will close on July 26th, for that rulemaking.

The scope of this hearing today is limited to the October 29, 1998 proposed rule published to address diesel particulate matter exposure of underground metal and nonmetal miners. This hearing is the third of four public hearings to be held on the proposed rule. The first hearing was held in Salt Lake City, Utah, on May 11th; the second was in Albuquerque, New Mexico on May 13th, and the fourth will be in Knoxville, Tennessee on May 27th.

On October 29, 1998, MSHA published a proposed rule that would establish new health standards for underground metal and nonmetal mines that use equipment powered by diesel engines.

The proposed rule was designed to reduce the

risks to underground metal and nonmetal miners of serious health hazards that are associated with exposure to high concentrations of diesel particulate matter. Diesel particulate matter is a very small particle in diesel exhaust. Underground miners are exposed to far higher concentrations of this fine particulate than any other group of workers. The best available evidence indicates that such high exposures puts these miners at excess risk of a variety of adverse health effects, including lung cancer.

The proposed rule for underground metal and nonmetal mines would establish a concentration limit for diesel particulate matter, and require mine operators to use engineering and work practice controls to reduce diesel particulate matter to that limit. Underground metal and nonmetal mine operators would also be required to implement certain "best practice" work controls similar to those already required of underground coal mine operators under MSHA's 1996 diesel equipment rule. Additionally, operators would be required to train miners about the hazards of diesel particulate matter exposure.

Specifically, the proposed rule would require that the diesel particulate matter concentrations in

underground metal and nonmetal mines be limited to about 200 micrograms per cubic meter of air. Operators would be able to select whatever combination of engineering and work practice controls that they want, to keep the dpm concentration in the mine below that limit. The concentration limit would be implemented in two stages. An interim limit that would go into effect following eighteen months of education and technical assistance by MSHA, and a final limit after five years. MSHA sampling would be used to determine compliance. The proposal for this sector would also require that all underground metal and nonmetal mines using diesel-powered equipment observe a set of "best practices' to reduce engine emissions, such as the use of low-sulfur fuel.

The comment period on the proposed rule was scheduled to close on February 26, 1999. However, in response to requests from the public for additional time to prepare their comments, and with additional data added to the rulemaking record by MSHA, the Agency extended the public comment period until April 30, 1999.

The Agency welcomes your comments on the significance of the material already in the record, and any information that can supplement the record. For example, we welcome comments on: additional information

on existing and projected exposures to diesel particulate matter and to other fine particulates in various mining environments; the health risks associated with exposure to diesel particulate matter; on the costs to miners, their families and their employers of the various health problems linked to diesel particulate matter exposure; or additional benefits to be expected from reducing diesel particulate matter exposure. The rulemaking record will remain open for submission of post-hearing comments, until July 26, 1999.

MSHA has received comments from various sectors of the mining community and has preliminarily reviewed the comments it has received thus far. MSHA would particularly like additional input from the mining community regarding specific alternative approaches discussed in the economic feasibility section of the preamble. As you might recall, some of the alternatives considered by MSHA included: an approach that would limit worker exposure rather than limiting particulate concentration; a lower limit; shortening the time frame to go to the final limit; more stringent work practices and engine controls; and requiring particular filters on all equipment.

The Agency is also interested in obtaining as

many examples as possible of specific situations in individual mines; for example, the composition of the diesel fleet, what controls cannot be utilized due to special conditions, and any studies of alternative controls you might have evaluated using MSHA's computerized Estimator. We would also like to hear about any unusual situations that might warrant the application of special provisions.

The Agency welcomes comments on any topics on which we should provide initial guidance, as well as any alternative practices which MSHA should accept for compliance before various provisions of the rule go into effect.

MSHA views these rulemaking activities as extremely important and knows that your participation is also a reflection of the importance you associate with this rulemaking. To ensure that an adequate record is made during this proceeding, when you present your oral statements or otherwise address the panel, I ask that you come to the podium and clearly state your name, spell your name, and state the name of the organization that you represent.

It is my intent that during this hearing, anyone who wishes to speak will be given an opportunity.

Anyone who has not previously asked for time to speak needs to tell us of their intention to do so by signing the Request to Speak Sheet; which was outside the door and I think has been brought in, so you need to tell us if you want to speak. And also, we need to know how much time you need for your presentation. Time will be allocated for you to speak after the scheduled speakers. We are scheduled to go until 5 p.m. today. Of course, we will call a halt if we run out of speakers.

I will attempt to recognize all speakers in the order in which they request to speak. However, as the moderator, I reserve the right to modify the order of presentation in the interest of fairness. I doubt that it will be necessary, but I also may exercise discretion to exclude irrelevant or unduly repetitious material, and, in order to clarify certain points, the panel may ask questions of the presenters.

This morning, our first presentation is going to be made by Martin Marietta Aviation, and it will be made by Chris Bryan.

CHRIS BRYAN - MARTIN MARIETTA MATERIALS

MR. BRYAN: Good morning. My name is Chris Bryan, C-H-R-I-S B-R-Y-A-N. And with me is John Head of Harding Lawson Associates.

I'm representing Martin Marietta Materials, headquartered in Raleigh, North Carolina and the National Stone Association. I'm the Manager of Safety for Martin Marietta Materials, I'm also the Chairman of the Diesel Subcommittee of the Safety and Health Committee for the National Stone Association.

Martin Marietta is the second largest producer of aggregates and building materials in the U.S. We currently operate more than 250 quarries, sand and gravel pits, underground mines, and distribution yards throughout the country, employing more than 5,600 people in 25 states.

Martin Marietta is the single largest operator of underground metal/nonmetal mines in the U.S., with a total of twelve underground stone mines located in Nebraska, Illinois, Indiana, Iowa, and West Virginia. These mines employ more than 400 employees. Average of thirty-five miners at each underground mine, ranging from a low of eleven miners to a high of seventy-five miners.

Each of these underground limestone mines, operating independently, are "Small businesses" as defined by the Small Business Administration, less than 500 employees. Four of these mines are "Small mines" as

defined by MSHA, less than twenty miners.

Martin Marietta operates 190 pieces of diesel powered equipment in its underground mines. Of these 120, 63% have, -- of these 120 or 63% have diesel engines that are larger than 150 hp, 89 have diesel engines that are larger than 300 hp.

Mr. Head of Harding Lawson Associates will discuss the anticipated cost implications for the stone industry in general. However, I can state that the cost of compliance with the rule as proposed would have a large impact on my company. With respect to competing operations, some, as a result of this proposed rule, may become noncompetitive; others, serving markets where surface reserves are not available, may have to significantly increase prices resulting in a negative impact on the local communities.

As the Chairman of the National Stone Association's Diesel Subcommittee, I would also like to comment more broadly on behalf of the members of that association.

The National Stone Association, based in Washington, D.C., is a trade association that represents more than 680 member companies and approximately 75,000 working men and women in the aggregates industry. In

total, it's members operate forty-three underground stone mines, owned by twenty-two different companies, with a total employment of approximately 1300 miners. Led by its member companies, the NSA, along with other trade associations, producers, and labor unions, working through the Coalition for Effective Miner Training, have engaged in a cooperative effort with the Mine Safety and Health Administration to develop training standards for surface stone and sand and gravel mines. I believe this demonstrates a willingness to work with the agency to promote regulations that effectively improve the health and safety of all of our employees.

Both NSA and my company, Martin Marietta Materials, endorse the comments submitted by the National Mining Association and the MARG Diesel Coalition. We believe that the conclusion linking diesel particulate exposure with elevated risk of cancer in underground metal/nonmetal miners remains unproven. We further believe that the current NIOSH 5040 method for measuring diesel particulate exposures in the atmosphere of underground metal/nonmetal mines is uncertain at best. Thus, we request the agency stay action on the proposed rule until, (a) a clear link can be demonstrated between diesel particulate exposure and

elevated risk of cancer in underground miners, and (b) a reliable and accurate method of measuring diesel particulate becomes available.

There are two further issues I would like to present to the panel:

(1) Underground mines are more friendly to the environment than quarries. The U.S. Environmental Protection Agency has recognized this fact by exempting underground mines from Part 000 Point Source Emission standards. We believe that the Mine Safety and Health Administration has not undertaken its statutory obligations to coordinate its action in this proposed rule with other affected agencies.

(2) We will submit comments on the actual language in the proposed rule and on the individual standards themselves in our written response to the agency before the close of the record in July. Should not be construed as an endorsement of the rule itself. We are merely submitting these comments in the event that the agency will, at some point in the future, overcome the two shortfalls in its present process, namely the lack of scientific basis and the inability to measure diesel particulate accurately in the underground environment.

I would like to thank the panel for its

attention and for giving me the opportunity to participate in the rulemaking process. With that, I'll turn it over to John Head.

(Pause)

H. JOHN HEAD - HARDING LAWSON ASSOCIATES

MR. HEAD: My name is John Head, I work with Harding Lawson Associates. I'm representing the National Stone Association today in the comments on this proposed rule of diesel particulate.

My comments are going to be on behalf of the National Stone Association, with data abstracted from a more general study that I presented in Salt Lake City on the industry in general. It's comments on the regulatory flexibility analysis. The study was sponsored by the National Mining Association, with the National Stone Association, the Salt Institute and the MARG Diesel Coalition.

Some of this is going to be a little bit repetitive for the people that were in Salt Lake City, but I'll run through it relatively quickly. The study to analyze the regulatory flexibility analysis consisted of a survey of all underground metal and nonmetal mines, discussions with manufacturers and mine operators, suppliers of after-treatment devices and so on, a review

of published materials and then, we estimated revised costs for the various control measures.

The analysis process itself, consisted of computerizing the survey data, plugging it into a compliance cost model. We only looked at those three standards, (57.5060), paragraph a and paragraph b, and (57.5067). Those are the three standards that deal with either replacement engines, which is (5067), or with issues to control diesel particulate matter, which are the first two. We developed an annualized compliance cost using the model based, -- and I emphasize, using the same parameters, using the same format as that in the preliminary regulatory economic analysis. We calculated the initial compliance cost by taking the total cost figure and factoring those to a net present value.

The analysis was not exhaustive, it was not, -- didn't take into account some issues. Things like, lost productivity during the time when equipment is down for upgrades and so on. Didn't take into account additional manpower needed, both for operations and maintenance; training and record keeping costs, equipment resale costs; one time expenditures, such as a new service shaft; and the maintenance costs associated

with increased ventilation flows, things like the higher pressures involved, and the higher flow rates.

General conclusions, again, presented in Salt Lake City; this is just a rehash of those. We believe MSHA underestimated the numbers of diesel units in use, and the assumption of engines costs did not take into account the difficulty of converting old engines with the newer clean-burning units, and the significant difficulties most mines will face in improving and significantly upgrading their ventilation systems.

Turning now specifically to the stone industry. Stone is just over 50%. Eighty-eight of the 175 mines that we determined are underground mines that are still active in the U.S. So, it's the largest single segment. By stone mines, I'm including the aggregate operations, the limestone and (indiscernible) mines, but also the granite, the lime producers and marble. It's a fairly small fraction of the large mines, but an overwhelming fraction of the small mines, as defined by MSHA, less than twenty employees. In fact, nearly 80% of the fifty-three small mines in the U.S. are stone mines.

Turning now to the employment in those stone mines. Only 19% of all 18,000 underground

metal/nonmetal miners are employed in stone. Sixteen percent are in the large mines, but, again, a disproportionate number of those miners employed in the small mines are in the stone industry. The really astonishing figures to me are the bottom two, the thirty-one mines that employ fifteen or fewer, and thirteen mines that have ten or fewer employees. Very small operations. There are some that go down as small as four.

Again, the numbers are slightly skewed. The four largest mines produce lime. The lime producers have large workforces associated generally with their kalium burning operation. So, maybe they're not representative truly of the underground stone producers, because these are people that actually work on surface in the kalium operations. Nevertheless, those numbers are factored into this analysis.

Primary conclusions of the stone analysis: that the stone mining industry will bear a heavy burden in terms of compliance costs. Possibly even a disproportionate burden. And there are questions as to whether the MSHA preliminary regulatory economic analysis has adequately addressed the issue of compliance costs as they relate to small businesses.

This (indicating) is a very busy slide, but if I can walk you through it. Looking at diesel units in underground stone mines. First of all, we'll look at the total in all underground metal/nonmetal mines. MSHA's economical analysis just over 4,000 total. The actual results, representing about 60% response from all mines, shows almost that number. If it's factored up based on the number of responses to the actual number of mines, that goes up to about 6,000. Stone mines represent about a third, -- a little bit over a third. I mean,-- for give me, a quarter, -- my math never was very good understand, -- about a quarter of all mines. Diesel units per mine, relatively few, but the issue is miners per diesel unit. MSHA's economic analysis assumed about four miners per diesel unit. And in the stone industry if you prorate it depending on the responses to the total number of mines in the group, that goes to two. So, there are actually twice as many units per miner in the stone industry. It's a heavy user of diesel equipment per miner.

MR. TOMB: Can you leave that up there?

MR. HEAD: Certainly.

MR. TOMB: Go over that again, on average miners per diesel unit, -- your point?

MR. HEAD: In MSHA's economic analysis calls for about a quarter of a unit per miner. This (indicating) doubles. There are relatively more units of diesel equipment per miner. Or the reverse, obviously, fewer miners per unit.

MR. TOMB: Does that mean less units are running at one time then?

MR. HEAD: No, I think what that means is that all diesel, -- all stone mines use diesel equipment and use it extensively, whereas a lot of other metal/nonmetal mines may use electric equipment, for example (indiscernible) and only use diesel for oreage (phonetic) or things of that nature.

The top two lines in each of these categories are the numbers that I presented in Salt Lake City. And what I've done is I've added the costs for the stone industry specifically. That is not as dramatic as the next slide that I'm going to show, if I may. We can come back to this in a minute.

If you look at the costs per miner, costs per miner go up significantly with the stone industry. So, again, the impact on the stone industry and on the individual stone operation is likely to be very high. And, again, to rehash, one of the primary conclusions,

we believe this is very germane to some of the Small Business Administration analysis that may be missing from the economic analysis that MSHA did.

That concludes my presentation. If there are any questions for either me or Mr. Bryan, we'd be happy to take them.

MR. TOMB: John, why don't we go back up to the, --

(Pause)

MR. TOMB: Thank you very much for your presentation. You have any questions?

MR. HEAD: Mr. Chairman, if I may make a point. Because I didn't go through my slides in a verbatim fashion, would it be appropriate for a copy of the slides themselves to be included in the transcript itself?

MR. TOMB: Yes, they will be.

MR. HEAD: Thank you, sir.

MR. TURCIC: I have a question.

MR. TOMB: Pete.

MR. TURCIC: John, I have a question on your analysis. In looking at the, -- when you estimated the, -- particularly the replacement cost, --

MR. HEAD: Yes sir.

MR. TURCIC: -- for the engines, how did you factor in that, -- or what kind of factor did you apply that the requirements for the approval are basically the same requirements and the same tests that are involved in EPA off-road requirements? Did you factor in that those engines need approved, -- need evaluated for EPA purposes, anyhow? Was that factored in, and if so, how long of a time period did you show, you know, until all the engines that you can buy will have gone through the tests that are required by the rule?

MR. HEAD: I did not consider any issues related to the EPA style of clean-burning engines, -- the EPA approved units. I'm not sure that the EPA rules do apply to equipment used in underground mines.

MR. TURCIC: But the question goes to, -- I mean, I'm not aware of any manufacturers that only make engines for underground mining. And these engines typically are off-road engines. So, since EPA has a time schedule for all engines that are off-road engines, I'm just wondering if that was factored in somehow into the cost analysis?

MR. HEAD: The specifics of the analysis, no, that, -- again, the EPA issue has not been factored in. The primary model for developing and deriving these

numbers was taken directly from that model used in MSHA's economic analysis, in terms of engine replacement schedules and things of that nature.

MR. TOMB: Any other questions?

(No Verbal Response)

MR. TOMB: I'd like to ask Mr. Bryan, -- is it Bryan?

MR. BRYAN: Yes.

MR. TOMB: All right. In your statement you mentioned the inability of the, I guess, the MARG 5040 method to provide a method for analyzing diesel particulate samples. And I was wondering if you had some data to support that, and if it could be shared with the committee?

MR. BRYAN: I'd just revert that to John.

MR. HEAD: We undertook some testing on behalf of Martin Marietta, and there is some suspicion that cigarette smoking influenced some of the readings. We don't have any firm precision on what effect it had, but there was some question as to whether cigarette smoking did actually bias some readings. And I think more generally, the comment was in relation to endorsing those comments by the National Mining Association and MARG, who have put into the record very significant

reservations about the 5040 Method.

MR. TOMB: Okay. In the stone mines were there samples as part of that study that was discussed in the last hearing, were samples collected in your mine, -- in the stone mines for that?

MR. HEAD: Yes sir.

MR. TOMB: They were?

MR. HEAD: Yes sir.

MR. TOMB: Okay.

MR. TURCIC: Now, your reservation on the, -- so that I understand, -- on the 5040 Method, is it that, -- as a method to determine the amount of diesel particulate, or is it a method, -- or is your reservation that it doesn't accurately determine the amount of total carbon? I mean, that could be two different, -- that could be two totally different and distinct things.

MR. HEAD: I think we have to go back to the experts in this field, Pete. You know, there have been people that have done exhaustive studies and that evidence has been read into the record, and, you know, we stand by that. If you're asking the two of us do we have any specifics? No, we do not.

MR. TOMB: Okay. Thank you for your

presentation. Our next presenter is going to be Mr. David Septual (phonetic) from the Nevada Mining Association.

MR. SCHEIDIG: As I mentioned in Albuquerque, to Mr. Tomb, -- I'm Paul Scheidig, -- we're not going to, -- we don't plan to make a testimony yet, today.

MR. TOMB: Okay.

MR. SCHEIDIG: It depends on how this goes. But I will be making a presentation in Knoxville, later this week. So, we just didn't have anything prepared for today, but we reserved a spot just in case we had something.

MR. TOMB: Okay. When you said, "It depends on how this goes," what, --

MR. SCHEIDIG: Well, like in Albuquerque, there were a couple of questions that came up, so, I took the opportunity to go to the podium then.

MR. TOMB: Okay. I thought there was something hidden here.

MR. SCHEIDIG: No. A couple have come up already, so I might take that opportunity as well. We'll see.

MR. TOMB: Okay. Thanks, Dave (sic).

MR. KOGUT: Would you please give your name

and affiliation, for the record?

MR. SCHEIDIG: I think I did. Paul Scheidig, S-C-H-E-I-D-I-G.

MR. TOMB: Okay, I'm going to move you down to the bottom of the list, okay?

MR. SCHEIDIG: Okay.

MR. TOMB: Okay. The next presenter then, would be Mr. Bertram, from the Salt Institute.

MR. BERTRAM: You caught me by surprise.

MR. TOMB: Take your time.

(Pause)

BRUCE BERTRAM - SALT INSTITUTE

MR. BERTRAM: My name is Bruce Bertram, B-E-R-T-R-A-M. And I'm Technical Director with the Salt Institute in Alexandria, Virginia. The Salt Institute is the association of the major North American and world-wide salt producers. We represent five U.S. salt producers with nine underground mines in the United States. Salt Institute member companies are vitally concerned about the safety and health of their employees. They refuse to compromise on the issue of safe and healthy working conditions. As evidence of that concern, the Salt Institute maintains a safety performance database. This data base includes three

separate incidence rates for occupational illnesses and injuries. These data show that reportable incidents, lost time incidents, and work days lost have declined significantly during the past twenty years and more. Diesel particulate matter exposure of employees is lower now than in the past due to the use of low-sulfur fuel, the introduction of newer technology engines, and improvements in ventilation. These reductions in dpm exposure have occurred as a result of normal operating improvements. The mining of rock salt itself is vital to safety. The largest single use of rock salt is for pavement deicing, ensuring driver safety and continued mobility during winter operation of Snowbelt streets and highways.

The Salt Institute opposes MSHA's proposed rule on diesel particulate matter. The association between dpm levels and human health is not well understood. There is no scientific basis at this time for correlating dpm exposure to lung cancer in humans, as MSHA contends. Even MSHA acknowledges in its Preliminary Regulatory Economic Analysis that the scientific evidence may not be sufficient to generate conclusive, dose-response estimates. In addition, no scientific evidence supports the exposure level of 160

micrograms per meter total carbon. In fact, there is widespread disagreement in the scientific community about the health effects of dpm exposure. Many scientists are concerned about the lack of data correlating dpm exposure in mines to lung cancer in humans. These opinions were reported to be evident during the March 7th through 9th Health Effects Institute Workshop.

Dr. Peter Valberg, of Grady (phonetic) Incorporation, recently Commended on the science in his critique of the analysis used by the ACGIH to recommend a threshold limit value for diesel exhaust. With regard to the rat studies, Dr. Valberg says ACGIH "Rightfully does not use data from rats exposed by chronic inhalation to diesel exhaust". But, ACGIH incorrectly says that the concern is extrapolation from animals to humans, rather than the irrelevance to humans of rat responses at high concentrations. Dr. Valberg says that ACGIH doesn't put dpm exposures into perspective with the actual dose received. He calculates that an occupational exposure to 500 micrograms per cubic meter diesel exhaust yields a mutagenic dose equivalent to smoking approximately one cigarette per month. He also says that a dose-response cannot be demonstrated in the

epidemiological studies. He compared information on the reported lung cancer risk against estimated diesel exhaust concentrations for various occupations. He found two orders of magnitude difference in potential diesel exhaust particle exposure. However, the reported relative risks cluster in a very narrow range. Dr. Valberg states that ACGIH's proposed TLV is inconsistent with other regulations and recommendations. He notes specifically that the ACGIH TLV is far much more stringent than EPA's National Ambient Air Quality Standard for PM 2.5. Thus, ACGIH's TLV requires air in the workplace to be cleaner than ambient air. According to Dr. Valberg, EPA's 65 micrograms per cubic meter is equivalent to an occupational level of 660 micrograms per cubic meter.

Current research by the National Institute of Occupational Safety and Health and the National Cancer Institute, when completed, will provide a better scientific understanding of the relationship between dpm and miners' health. Two Salt Institute member companies are participating in the study.

MSHA's economic impact and technical feasibility estimates are inadequate. Preliminary review by Salt Institute member companies, and estimates

by Harding Lawson Associates, indicates MSHA's compliance cost estimates and economic impacts are understated by a factor of at least three. Harding Lawson Associates, as reported during the May 11th hearing and again today, studied the costs of compliance associated with MSHA's proposed rule. They found that total annual and annualized costs to the metal and nonmetal mining industry would be fifty-eight million dollars, compared to MSHA's estimate of twenty million dollars. Harding Lawson found that total annualized and annual costs for the salt mining industry alone would be far more than 6.1 million dollars. Even without data for one large mine and one small mine, which are not included in the study. The Salt Institute's Statistical Report Analysis shows 11.8 million metric tons of rock salt sold by Salt Institute member companies during 1998. The additional annualized costs of far more than 6.1 million dollars will adversely affect the U.S. salt industry's competitiveness. The high costs necessary to comply with MSHA's proposed rule would make the U.S. less competitive with offshore salt producers. It will result in a loss of jobs. During the past five years, imports of salt to the U.S. averaged about nine million metric tons per year, reaching 10.6 million metric tons

during 1996. Offshore salt producers can import solar salt and rock salt to the U.S., in direct competition with U.S. rock salt producers. One South American country exported to the U.S an average of 1.5 million metric tons during the past five years, with a high of 2.65 million metric tons during 1996. Thus offshore producer can quickly increase salt exports to meet demand, and to capitalize on higher production costs in the U.S.

Costs to government highway agencies and other consumers of rock salt would rise. Additional costs created by this proposed rule will be absorbed unnecessarily by taxpayers and consumers with no substantiated health benefits to miners.

The mining industry has questions about the technology to reduce dpm concentrations to MSHA's proposed level of 160 micrograms per cubic meter. Research currently underway by a Canadian Diesel Elimination Program may answer these questions. Research results will provide data on the effectiveness of various methods of reducing diesel engine emissions and on the accuracy and reliability of dpm sampling techniques.

Potential health benefits to miners by

reducing dpm concentrations are unknown and unsubstantiated. Moreover, as noted, compliance costs are higher than estimated by MSHA. Average dpm concentrations in metal/nonmetal mines today, specifically salt, are lower than MSHA's indicated average of 830 micrograms per metric meter. That number is based on testing conducted during the early 1990(s). Two Salt Institute member companies indicates that current average dpm concentrations in mines today, the benefit-to-cost ratio will be substantially lower than estimated by MSHA.

As noted earlier, NIOSH Analytical Method 5040 for measuring dpm concentrations reportedly is not accurate for determining levels of total carbon. MSHA and NIOSH must further develop this test so it is reliable and accurate. Salt Institute member companies will offer more specific comments on it.

Because of the facts presented in my comments and those by other mine operators and mining associations, MSHA should set no dpm limit until the NIOSH/NCI study and the Canadian DEEP research are completed. MSHA should wait until NIOSH, NCI, MSHA and industry scientists agree that a scientifically sound basis exists for a dpm exposure limit. During the

interim, MSHA should develop an accurate method to determine dpm exposure levels, further MSHA should obtain current data on actual underground dpm exposure levels in mines. When this information is available, MSHA should review dpm concentrations, based on the new data, and determine whether a dpm rule is required.

I appreciate the opportunity to present our views on this matter. We support the comments of IMC Salt and Morton Salt, the MARG Group and the Harding Lawson presentation earlier, with National Stone.

The Salt Institute intends to submit post-hearing comments, and may make a request to make further comments at the hearing in Nashville (sic), should time be available. And that concludes my comments.

MR. TOMB: Thank you very much, Mr. Bertram. Questions?

MR. SASEEN: Mr. Bertram, can you supply any, -- the types of, -- you talked about you had modern engines, -- newer engines in your machines, are those in your larger engine class, or is that in your smaller types of vehicles?

MR. BERTRAM: I'm going to defer that question to other Salt Institute members who will be testifying. I have no specific data on that, but our

member companies do.

MR. SASEEN: Okay, I'll just have to follow-up. Are you aware that there's been a use of the Estimator with these newer engines to see what types of levels the Estimator estimates, that we presented in the preamble?

MR. BERTRAM: I'm not aware of whether that, -- I suspect the answer's yes, but I'm not, -- I cannot conclude.

MR. SASEEN: Thank you.

MR. TOMB: Pete?

MR. KOGUT: Mr. Bertram, you spoke of the data that had been collected in salt mines, -- I believe you said during the mid-'90(s) on diesel particulate levels. Are you going to be making that data available to the committee?

MR. BERTRAM: The data I referred to were the data that MSHA has, based on testing in I think, the late '80(s) and the early '90(s), and Salt Institute member companies have more recent data that they've developed, I think partly on a NIOSH study, and that information will be available from that.

MR. KOGUT: What I'm referring to is the data you said that showed levels considerably lower than the

average that we had in the mines that we sampled, across all different metal/nonmetal mines. within those mines that we sampled we had an average underground to be 830. So, are you saying that the data that you were referring to showed a level considerably lower than that for the subset of those mines that were salt mines?

MR. BERTRAM: Yes. I'm saying that our member companies are reporting to us that they are finding levels lower than the 830 average reported by MSHA.

MR. KOGUT: But that would, --

MR. BERTRAM: Current levels.

MR. KOGUT: -- right. But that would just apply to salt mines?

MR. BERTRAM: Salt mines, that's correct. I'm not aware of what the other metal/nonmetal mines are.

MR. TURCIC: You referred to the data from the NCI study, right?

MR. BERTRAM: Yes.

MR. TURCIC: Okay, that's what I thought.

MR. KOGUT: You also, in paraphrasing Dr. Valberg, you, -- and I'm paraphrasing your, I guess, quotation of him, saying that the relative risks for

exposed workers tend to cluster in a very narrow range. And I think that you made, -- the same point was made in some of the written, -- pre-hearing written comments that I saw. I think in connection to that, I want to point out that the, -- although the overall relative risks in studies on occupational cohorts and case control studies on occupational, -- although the overall relative risks tend to cluster at a level between 1.3 and 1.5, in those studies, -- and there aren't very many of them, that looked at miners, there were several instances in which the relative risks for miners, which, -- underground miners, which might be expected to have a, -- or we expect to have a much higher level of exposure, did show a somewhat higher relative risk than that range of 1.3 to 1.5. And, in particular, I'm looking at Tables III-4 and III-5 from the notice, Federal Register Notice. In Boffetta, et al., 1988, there was a statistically significant result reported for miners of 2., -- a relative risk of 2.67, and that was a smoking adjusted result. And then, in Table III.5 (sic), Benhamou, et al., reported a relative risk of 2.14 for miners. That, again, was smoking adjusted result. Lerchen, et al., 1987, reported an odds ratio of 2.1 for underground non-uranium miners. Again,

adjusted for smoking. And Swanson, et al., 1993, reported an odds ratio of 5.03 for mining machine operators. In our reading of the literature, the limited results that have been reported for mining does seem to be somewhat higher than what's typical of other occupations. So, I think that Dr. Valberg's comments were probably directed not specific, -- in those comments that you referred to, were not really directly specifically towards mining and the exposure levels that we're seeing in mining, but to occupational exposures in general. Would you care to respond to that?

MR. BERTRAM: I'm not an epidemiologist and I'm merely reflecting what Dr. Valberg has said in his critique of the ACGIH proposal. So, I cannot do that either way.

MR. TOMB: I have one question. Unless I misunderstood your presentation, you talked about the Salt Industry making measurements in their mines. Do you know what, --

MR. BERTRAM: On levels?

MR. TOMB: Yes, on levels.

MR. BERTRAM: I'm aware that since the rule has come out some of our member companies have determined levels of dpm in mines. In part, in

conjunction with the NIOSH study.

MR. TOMB: Okay. Well, the NIOSH study used Method 5040. Is that what the Salt Industry used also?

MR. BERTRAM: I believe the Salt Industry has used other tests as well, but I will have to defer that question to specific comments by our members.

MR. TOMB: Okay. We'd be interested in any information the Salt Industries had with respect to, -- specifically, the Salt Industry had with respect to Method 5040.

MR. BERTRAM: I expect that will be covered.

MR. TOMB: Yeah. Okay. Thank you very much.

MR. SASEEN: Tom.

MR. TOMB: Oh, one more question.

MR. SASEEN: Did the two sets of data, the one back in the '80(s) and then more recent data which showed a drop in dpm levels. Are you prepared to present any information on what the diesel fleet was then and is now, as a comparison of seeing what clean engine technology can or has provided in your salt mines?

MR. BERTRAM: You mean to provide lists of equipment?

MR. SASEEN: Yes, if there is lists, --

MR. BERTRAM: A list of engines and that type of thing?

MR. SASEEN: Yes. You know, loaders and trucks then versus now, to see possibly a correlation of direct, you know, dpm reductions from new engine technologies?

MR. BERTRAM: I expect that data are available. I don't have it, but I can discuss that with our member companies and see if they can produce it. It may even be coming out in some of the testimony.

MR. SASEEN: Okay. Thank you.

MR. TOMB: Thank you very much for your presentation.

(Pause)

MR. TOMB: Thank you, Mr. Bertram. Okay. Our next presenter will be Mr. Wilson, from the, -- Morton Salt.

MR. WILSON: There are three presenters, --

MR. TOMB: Okay.

MR. WILSON: -- myself and two others.

(Pause)

MR. WILSON: All set?

MR. TOMB: Uh-huh (positive utterance). State your name for the record.

MR. WILSON: All right.

RICHARD WILSON - MORTON SALT DIVISION

MR. WILSON: Ladies and gentlemen, I am Richard Wilson, W-I-L-S-O-N, Director of Manufacturing for Mining operations for the Morton Salt Division of Morton International, Inc. Morton welcomes the opportunity to comment on MSHA's Proposed Rule Diesel Particulate Matter Exposure of Underground Metal and Nonmetal Miners.

Morton Salt operates its mines in accordance with all rules and regulations and with the safety and health of our employees as a paramount concern. My following comments reflects comments before the end of the comment period.

We appreciate MSHA's decision to extend the comment period. We look forward to continued participation in this rulemaking effort.

Morton is proud of its contribution to public safety. Salt saves lives by significantly reducing the number of highway accidents in snowbelt areas.

We are also proud of our focus on the commitment to continuous improvements in the safety of our mines including the improvement of the mine atmospheres. Morton operates three underground salt mine in the U.S.,

three in Canada and one in Europe.

Morton's three underground salt mines in the U. S. are located at Weeks Island, Louisiana, Grand Saline, Texas; and Fairport, Ohio. Weeks is a multi-level benched room and pillar mine, situated in a salt dome, serviced by two vertical shafts with ramps between two levels.

Diesel-powered equipment was introduced in the late 1950(s). The equipment has been changed over the years to larger, more efficient vehicles. There are fifty-two diesel-powered vehicles in the fleet, with 4,886 total horsepower. The largest single units are LHD(s) with 475 hp each.

Equipment has been purchased with the cleanest engines available. An extensive test was run using ceramic filters on two LHD(s) in the early 1990(s), but these did not prove to be reliable or cost effective. A new 400 hp ventilation fan was installed in 1988 to increase the airflow from 240 to 430, 000 CFM.

The small Grand Saline mine in eastern Texas was started by Morton in 1931. Similar to Weeks, it, too, is in a salt dome, but consists only of one benched room and pillar level. Diesel equipment has been used since 1972. There are nineteen diesel-powered vehicles

in the equipment fleet, with 2,355 total hp.

The largest engine, 370 hp, is on a Condor high-lift platform vehicle used for inspection and scaling. Replacement equipment is specified with the cleanest engines available.

The Fairport mine in northeastern Ohio started production in 1960 and has always run diesel equipment. It is Morton's deepest mine at 2,000' fleet with a single room and pillar level. The mine has a large fleet, which has evolved from a truck loader operation to LHD(s).

The mine has tried many different engines and all new equipment is purchased with the cleanest burning engines available. There are fifty-seven diesel-powered vehicles in the underground equipment fleet, with 6,504 total hp. The largest engine, 375 hp, is used on LHD(s).

In 1990, a roofbolter was equipped with a ceramic filter, which ran unsuccessfully for just over a year. The duty cycle of the filter was not aggressive enough to create enough heat to regenerate the filter. This mine has no further opportunity for ventilation capacity improvements short of sinking a new, larger shaft.

We have a number of comments regarding the major issues in the proposed rule. There are many reasons why Morton believes that implementation of this rule, or any other diesel rule, should be deferred. As we speak, two of Morton's mines are voluntarily participating in an extensive study of the potential health effects of DPM on underground miners.

This study is being conducted by the National Institute of Occupational Safety and Health and the National Cancer Institute. This study will produce initial reports starting next year and be completed at least on year before MSHA's proposed final limit for dpm in the mine atmosphere.

Although other studies have been conducted on the health effects of diesel exposure, these previous health studies have been inconclusive regarding risk and they have not generated sufficient data to support a dose/response relationship.

For this reason Morton believes that rule-making is premature and should be deferred until the NIOSH/NCI study is completed. Until this study is completed, it is impossible to determine if an exposure limit is needed, and if such a limit is needed, what would be a proper exposure limit.

All of the previous studies on dpm have failed to isolate confounding factors such as smoking and background carbonates, thereby failing to establish any direct link between dpm and lung cancer or other diseases. This is particularly true of the Garshick Study of railroad workers, which was severely criticized at the 1999 Health Effects Institute Workshop.

Moreover, many of the studies report no health effects whatsoever. Morton, through its National Mining Association and MARG affiliations, will provide MSHA with more detailed comments on the scientific issues and a critique of these studies used by MSHA to support the proposed rule-making.

Morton is also concerned about MSHA's establishment of a diesel particulate standard because we believe MSHA does not have sufficient data available on the actual exposure level in mines. We think MSHA's database is very small, outdated and inaccurate due to analysis method.

We think that MSHA should focus on the continued development and validation of a diesel particulate sampling and analysis method and then develop a national database identifying and quantifying the level of dpm exposure in the nation's mines.

Once an accurate sampling method is established, we suggest that MSHA perform annual sampling in all mine-exposed job classifications over the next three years. The cost of developing this database is small when compared to the costs of moving forward with an ill-conceived rule based on insufficient data.

Given the lack of scientific evidence, it seems only fair that we as a nation have the facts in front of us before we curtail production, import more foreign minerals, eliminate good paying jobs and damage the communities where these mines are located.

Morton believes the current standards for the gaseous components of the mine atmosphere are protective. If there are miners with poor ventilation, poor engine maintenance, and poor environmental conditions, MSHA can use its existing air quality standards to effect significant changes now.

However, we are concerned that diesel particulate matter may yet be proven harmful. With this in mind, we have recently sampled or are sampling the remainder of our mines, including those in Canada and Europe. No one, including MSHA, knows what a safe or unsafe level of diesel particulate is.

MSHA's justification for a standard 160 micrograms is flawed because it is based on 1988 ACGIH recommendation for which no dose/response analysis exists and which is unrealistic. To make matters worse, ACGIH recently modified their recommendation to 50 micrograms. The latter concentration is approximately the level found in the ambient air in Cleveland, site of one of our mines and similar to the levels found in many major areas.

It is Morton's position that the Proposed Rule sets a dpm standard that is not achievable. Morton has difficulty in understanding how some mines are going to comply with the proposed standard of 160 micrograms. Air quality monitoring by the EPA Office of Air Quality Planning and Standards in two urban areas shows 50 micrograms as an average of the mean particulate matter levels.

The maximum ambient level registered was 172 micrograms. MSHA, in its Estimator, has acknowledged this fact and has allowed an environmental background level of 50 micrograms in the calculations. In addition, scientists have found a background interference of 53 micrograms from the filter media used in the NIOSH 5040 Method.

NIOSH Method 5040 could also add another 48 micrograms to the measurements due to error based on 160 standard with its inherent +/- 30% inaccuracy. All of these factors add up to at least a 151 micrograms background and error level that the mines have no control over.

Morton has the following comments regarding the NIOSH 5040 Method for measuring dpm. The very basis of determining compliance with the Proposed Rule, measurement of total carbon with the NIOSH 5040 Method, has been proven by our participation in the NIOSH study, to be unreliable and very difficult.

NIOSH and MARG sampling and analysis has demonstrated that the method is complex and even highly skilled technicians cannot distinguish between diesel exhaust carbon, natural occurring carbons in the ores and other sources of carbon compounds. NMA and MARG technical experts will provide written comments on this issue. Morton has reviewed their comments and agrees with their conclusions.

It is Morton's position that the Proposed Rule is not economically feasible. The Proposed Rule will do substantial economic damage to the nation's mining industry, and in particular, the salt industry.

Enactment of the Proposed Rule will force mines to divert scarce financial resources away from vital health, safety, productivity and maintenance improvements.

Within the salt industry, the expenses related to complying with the Proposed Rule will certainly result in the loss of jobs to foreign competition. The estimated initial cost of the Proposed Rule for our three U.S. mines is approximately twenty million dollars and one of our mines may still have to limit production to meet the rule. If an additional shaft were required at one of our mines, its additional cost would be fifteen to twenty million dollars.

Under the Proposed Rule, even mines with relatively low dpm concentrations will incur substantial expense to ensure that they are in compliance with what is now a purely arbitrary rule. The Rule will use a single sample that does not measure personal exposure and has been shown to measure confounding carbonates as diesel particulate, such as cigarette smoke and shale.

MSHA, in its Estimator, has assumed that even on low emission engines, after-treatment would reduce particulate emissions by 65-95%. This is misleading. In fact, one of our major equipment suppliers does not

even recommend exhaust after-treatment devices on their low emission engines.

MSHA's benefit analysis is based on a five-fold decrease in dpm concentration from an average 830 micrograms to 160. This benefit analysis appears flawed, at least in Morton's case, since actual testing in our mines indicates that the average dpm levels are significantly lower that MSHA's average.

The additional improvements to achieve compliance with this arbitrary rule will be costly and accomplish very little incremental reduction in dpm exposure.

As we have stated, Morton has been very active in improving our mine atmospheres. All diesel equipment runs on low sulfur fuel and we follow the manufacturer's recommendation on maintenance of our equipment. Morton is an active participant in the NIOSH study. We are currently considering participation in a test in cooperation with Lubrizol and Caterpillar that uses a blend of water, additives and diesel fuel for lowering emissions.

We are also discussing testing with the University of Minnesota, Michigan Tech and NIOSH to measure levels of nanoparticles in the exhaust of old

and new diesel engines in our mines. We've tested ceramic filters in the early 1990(s) and continue to monitor this technology for future utilization.

We are a DEEP member and we are actively involved in their studies regarding engine maintenance as well as the use of catalysts and particulate filters in diesel. Morton has maintained an internal diesel committee, which monitors worldwide diesel technology progress to help us stay abreast of new developments. We purchase the latest generation of clean engine technology in underground equipment. We have added ventilation capacity at out Fairport, Ohio, and Weeks Island, Louisiana, mines.

The dpm exposure in Morton mines for production miners ranges from 60 micrograms to 490 micrograms in tests carried out during the last year. Like Morton, many U.S. mines are making good progress at improving their mine atmospheres. If the NIOSH/NCI study determines that dpm matter must be regulated in the future, Morton asks MSHA to look at an alternative standard that would not put an unreasonable burden on mines yet will still provide an improved working environment for miners.

Regarding future diesel regulation, if it is

required, Morton would suggest consideration of the following points. A single sample is not a valid compliance test. The Proposed Rule states that MSHA will determine compliance based on a single area sample result. A single sample result is not accurate enough for such purposes due to the variability of dpm concentrations within the mine as well as inaccuracies with sampling equipment and analysis.

Between using only a single sample and it taking weeks to get lab results, this method will not be very helpful in correcting problems. A more practical approach is to base any requirements on at least several samples taken at various times. Morton is concerned that with only four commercial labs currently performing the complex dpm analysis in the U.S., that analysis will not be timely.

It is our experience that any lab can and does make occasional mistakes. It is totally unrealistic to believe that corrective actions should be initiated based on the results of one test alone. A standard practice should be to retest with sufficient samples to validate the result.

Regarding the requirement that our employees be allowed to observe sampling on company time we are

opposed to this requirement because it is nonproductive. We will support a requirement to post results by job classification on employee bulletin boards. Operations should not be cited for the posting of sample results which are greater than the allowable limit. We also disagree with giving test information to miner's representative or other interested parties since this information is private.

Regarding restrictions on the sulfur content in diesel fuel, Morton agrees with the use of low sulfur fuels and has used them for years.

Regarding training, we agree with the requirement for training of employees in methods and procedures to minimize diesel exposure if it is incorporated in the Part 48 training. Similarly, procedures for minimizing exposure can be handled within 57.14100 (sic) pre-shaft inspections.

MSHA has strict and explicit regulations regarding the use of PPE for safety of miners. Personal protective equipment can be effective in reducing dpm exposure. This is particularly true if a mine has not been able to lower exposure using other means. The use of personal protective equipment should be allowed to comply with any future regulation.

Regarding EPA certification and maintenance standards, mine operators should be given the option of using EPA-certified engines. MSHA should drop its plan to certify engines. Duplicate certification is unnecessary. In fact, the requirement for engine certification and the requirement for mines to meet specified particulate levels impose a double standard on mine operators without adding benefits.

Morton agrees that equipment should be maintained in accordance with the manufacturer's specifications as outlined in the Proposed Rule. The manufacturer's latest maintenance practices should be considered best practices.

We agree with minimizing engine idling in mines, but we believe the Proposed Rule needs more specific guidelines on what constitutes idling under normal mining operations.

Morton does not believe that a mine should be evacuated on the basis of dpm non-compliance, particularly if it is based on one non-compliant sample. Given that diesel particulate has not been proven to be an acute hazard, a mine should not be shut down on this basis.

That concludes Morton's specific comments

regarding the Rule as proposed. As I stated earlier, detailed comments will be submitted in writing before the July 26th deadline. Morton is a member of the National Mining Association, MARG and the Salt Institute. We have read and reviewed their comments and, for the record, we support the testimony and comments of these organizations.

In conclusion, Morton is committed to being an industry leader through the continuous improvement of safety and health performance. Employee health and safety commitment is fundamental to the company's business strategy, and is integrated into all operational activities.

As an organization, nothing is more important than the health and safety of our employees, and Morton recognizes that all injuries, work-induced illnesses can be prevented through training, safe work practices, sound engineering, hard work and the implementation of a sound industrial hygiene and occupational health program.

This commitment and the overall safety effort have paid dividends to all Morton employees. Between 1994 and 1997, workplace injuries at Morton were reduced 50%. One of our mines was recently, -- has exceeded one

million man hours without a lost time accident and is a recent Sentinels Of Safety Award Winner.

Another one of our mines is currently working with over two million hours without a lost time accident. This mine has twice exceeded two million lost time free hour records in the 1990(s), a salt industry record. Morton is committed to continuing improvement in our safety and health program.

The Proposed Rule is not based on sound science and existing studies do not support any arbitrary limit on dpm exposure. Let's let science establish a need for a limit and if one is required,. let's let science determine what that limit should be. Thank you.

MR. TOMB: Thank you for your comments. Do you think it's better to take questions, or wait 'til, --

MR. WILSON: You want to hear from all three of us and then do it, or whichever?

MR. KOGUT: If it's all right with you, I'd, --

MR. TOMB: You'd like to do some now?

MR. KOGUT: Yes.

MR. TOMB: Okay. I just want to take this

opportunity to tell you that I think you made a good presentation from the standpoint of addressing specifics in the Proposed Rule, and I think that was very good and we appreciate that. Okay, Jon, do you have a, --

MR. KOGUT: Yeah. One thing I want to clarify is that you stated in your presentation that MSHA's justification for a standard of 160 micrograms per cubic meter is based on a 1988 ACGIH recommendation. And I think a reasonably careful reading of the proposal will reveal no such basing. It certainly wasn't our intention to base our proposed limit on the ACGIH limit. It was developed independently. The rational behind the limit that we proposed, was meant to represent the highest degree of reduction in existing levels that we thought to be technologically feasible. So, it's really a feasibility-based limit, and in that context we certainly appreciate your comments related to the feasibility of achieving that kind of reduction. But that was the rationale behind the limit. It was meant to be the level that we thought was technologically achievable.

MR. WILSON: It's remarkable they're so close. I guess, you know, we read into it that you were leaning on ACGIH.

MR. KOGUT: That really wasn't the case.

MR. WILSON: I understand.

MR. TOMB: I just want to make one comment with respect to that, and to emphasize that, -- also, that in the work that we did, the Estimator was used to try and really get, -- to confirm what we found in mines, and to what could be done using technology that's available to control dust or diesel particulates.

MR. WILSON: One of our presentations here this morning is in detail on the Estimator.

MR. TOMB: Okay.

MR. KOGUT: Let's see, I think I had one other question before the other presentations. Give me a moment to find it.

MR. TURCIC: I have one quick question. The comment you made on the proposal to use a single sample, is your concern that it's a, -- that a single sample is being used, or is the concern that the structure of the rule sets the environmental level as opposed to an exposure level?

MR. WILSON: Really both.

MR. TURCIC: Both?

MR. WILSON: We have a problem with one sample. The problems that, -- whether one sample could

be representative, and also the fact that we think that it needs to be a personal exposure. That the regulation, -- that's really what we care about.

MR. TOMB: You're saying you would like a personal exposure measurement and a triggering, --

(Laughter)

MR. TOMB: -- okay. Can I quote you that, --

MR. WILSON: For the record?

MR. TOMB: -- yeah. I'm going to write that down then. Go ahead.

MR. KOGUT: I found my, -- the note for my other question, -- or my question, since the previous thing wasn't really a question. You said that the, -- that 50 micrograms per cubic meter is approximately the level found in ambient air in Cleveland. Now, that 50 microgram per cubic meter level you say is in Cleveland, is that total respirable dust or is it a measure of diesel particulate, or what precisely is that a measure of?

MR. WILSON: Let me tell you where we got it.

MR. KOGUT: Okay.

MR. WILSON: We did get it off the EPA web site, on the web. And I really don't know the basis of it. We could look up that information for you and

comment further for you, what the basis of that is.

MR. KOGUT: Right. Because clearly there would be, -- you know, make a big difference if that refers to diesel particulate or all total particulate.

MR. WILSON: I suspect it's total. I think that that's the way the tables were set up. But, we'll do some research on that for you and clarify that in our July 26th comments.

MR. KOGUT: Okay. And by the EPA web site, are you referring to the web site for the ambient air particulate standards, or are you talking about a web site having to do with their proposed diesel particulate limits?

MR. WILSON: No, it, -- let me give you, -- when we comment in writing, let me give you the specific reference.

MR. KOGUT: Okay. Thank you.

MR. WILSON: You're welcome.

MR. TOMB: I have a comment with respect to the area similar to where these questions are coming from, where you say, "We have recently sampled," or "a sampling of the remainder of our mines, including those in Canada and Europe". And I guess my question is, what sampling methods are you using to, --

MR. WILSON: (5040).

MR. TOMB: (5040), okay. Another thing, -- I'm not sure whether I'm accurate in this, but somewhere in here I think you alluded to problems with the method with respect to samples that NIOSH has collected; you weren't happy with those results, -- or I forget how you phrased it exactly.

MR. WILSON: Let me explain.

MR. TOMB: Okay.

MR. WILSON: Along with MARG, who we are a member of, we did a parallel study, -- parallel samplings, parallel analysis, with the NIOSH people. When they were in our mine taking samples, we were taking parallel samples.

MR. TOMB: Uh-huh (positive utterance).

MR. WILSON: And used the 5040 Method at Clayton, near Detroit, to analyze those samples. It's really, -- the difficulties that we saw, that MARG saw, in their round of sampling that we refer to, we went on after that, -- and that was at our Ohio mine, -- we went on to do our other two mines in a similar fashion, and see the same thing.

MR. TOMB: With NIOSH? I mean, are you saying side-by-side with NIOSH?

MR. WILSON: At Pierpont, Ohio.

MR. TOMB: Only at that mine? Okay.

MR. WILSON: Yes.

MR. TOMB: Okay, do you have, --

MR. WILSON: Then we went on to do our other two mines, -- our other two U.S. mines, using the same methods.

MR. TOMB: Okay.

MR. WILSON: And through that process is where we saw the problems.

MR. TURCIC: Are you, -- I'm sorry. Are you taking side-by-side samples there, also?

MR. WILSON: No.

MR. TURCIC: Okay. I was just wondering if, --

MR. WILSON: NIOSH has not been, -- on those sites.

MR. TURCIC: Okay.

MR. TOMB: Did your samples compare with NIOSH's samples at the one mine where you did a comparison, or didn't they compare?

MR. WILSON: We have just received the NIOSH data, and we haven't analyzed that at the moment. Just yesterday.

MR. KOGUT: Would you be able to provide us with those data as part of this record?

MR. WILSON: Our data that we took?

MR. KOGUT: In addition, it might be, -- for the purpose of this rulemaking it might be more efficient for us to get the NIOSH data that you would be comparing, in conjunction with the data that you've collected, so, --

MR. WILSON: I assume you have the NIOSH, -- or will have the NIOSH data? I mean, if you're asking for our, --

MR. TOMB: We don't have it now, and whether we will have it, I don't know. So, we'll try and get it, but I don't know whether we'll have it.

MR. WILSON: I mean, Morton, I believe will supply our own data. I mean, you're welcome to that. We're giving that to our employees, so, you're welcome to have it. We'll supply that with our July 26th submission.

MS. WESDOCK: Good morning, Mr. Wilson. I just have a few questions. You testified that an extensive test was done using ceramic filters and two LHD(s) in the early '90(s).

MR. WILSON: Yes ma'am.

MS. WESDOCK: Would you be able to submit the results of those tests?

MR. WILSON: I could supply you with some kind of write-up, our results of it, yes.

MS. WESDOCK: And you said later on that due to the results of those tests that you're continuing to monitor this technology?

MR. WILSON: Yes ma'am.

MS. WESDOCK: Are you like, running tests, or, -- how are you monitoring?

MR. WILSON: Basically, the literature, -- developments in the literature, both in North America and Europe.

MS. WESDOCK: Okay.

MR. WILSON: We have considered further tests of those filters, and have as recently as several months ago talked with suppliers again about possible additional testing. We haven't moved forward on that at the moment.

MR. PATEL: We are also trying the additive testing.

MR. TOMB: George.

MR. SASEEN: Mr. Wilson, I have several questions.

MR. TOMB: Were you done, Sandra?

MS. WESDOCK: No.

MR. TOMB: Oh, I'm sorry Sandra.

MR. SASEEN: I'm sorry.

MS. WESDOCK: That's okay.

MR. TOMB: Finish your question. I'm sorry.

MS. WESDOCK: And you also, -- you stated that you are sampling the remainder of your mines, including those in Canada and Europe. And I take it that you're using (5040) in those samplings?

MR. WILSON: I'd have to confirm that for you. Definitely in the U.S. I don't know, I can't tell you in U.S. and Canada, what method is being used.

MS. WESDOCK: Okay. And you will be submitting to us those results?

MR. WILSON: Canadian and European results?

MS. WESDOCK: No, the U.S.

MR. WILSON: The U.S., yes ma'am.

MS. WESDOCK: Okay. One more, I think. I believe I'm done. Go ahead, George.

MR. SASEEN: Okay. Thank you. Mr. Wilson, on that roofbolter you said that was unsuccessful with the ceramic that had the duty-cycle, do you know if that roofbolter is going to be included in that DEEP project

to, -- in case to look at the possible passive or off-board type regenerations?

MR. WILSON: Do you mean for the future?

MR. SASEEN: Well, with this DEEP Project running, do you know if they're going to look at a system, -- you said that the on-board system failed, which I assume is the active because of the duty-cycle from your statement. Do you know if they're going to look at that roofbolter-type equipment with either passive or off-board-type regeneration as part of that study?

MR. WILSON: There's been some talk, but it just hasn't progressed far enough to tell you anything bench order.

MR. SASEEN: Okay. You made a statement that a, -- one of your suppliers recommended against exhaust after treatment controls on your low emissions engines. Do you know what the specific complaint was, -- or why the, -- I mean, specifically, why you shouldn't use them? That was on page, -- the top of page 8.

MR. WILSON: Let me give you a little background. In our normal replacement of equipment we're looking at replacement of an LHD for our Ohio mine, and in talking to Elvin Stone (phonetic)

Caterpillar, who is the supplier that proposed, LHD, it has Caterpillar's latest Huey electronically controlled engine, clean-burning engine. We specifically inquired as to the availability, and could they provide it with a sub-filter, a particulate filter. Not only did they not want to do it, they really would not do it, they would not supply it that way. And I think, if I remember right, maybe, -- and Pat can add something to this, it was a particulate, -- a particle size concern of theirs that the emissions of the proposed low clean-burning engine were, you know, -- that the filter would not be effective in further reducing its emissions. If I remember that right.

MR. PATEL: Yes, the particle that, -- being captured by the sub-filters have already been reduced by a low emission engine, and that's why they do not recommend. Also, at those temperatures in that low emission engine would be running at about 700 fahrenheit, while the diesel engine requires about 900 degrees fahrenheit. And that was the other thing that the, -- reason that they would not recommend using a sub-filter on that unit.

MR. TURCIC: Could you submit that for the record?

MR. WILSON: Yes, I think we have the write-up.

MR. TURCIC: Either in a letter or, --

MR. WILSON: I think we do have it in writing.

MR. SASEEN: You said you estimated the initial cost of the proposed rule for the U.S., -- your three U.S. mines, approximately $20,000,000.00. Could you give a breakdown of what that entails, as far as what costs are in to make up that $20,000,000.00? Can you supply that before the end of the rule?

MR. WILSON: In our written comments?

MR. SASEEN: In your written comments.

MR. WILSON: We'll try to comment on that for you.

MR. SASEEN: 'Cause it looks like you're saying you're, -- from 60 to 490 micrograms per cubic meter, based on your measurements last year?

MR. WILSON: Uh-huh (positive utterance).

MR. SASEEN: And so, does that $20,000,000.00 take it down to the (160), and what's involved in that?

MR. WILSON: You know, one of the things to keep in mind is that to get to those levels, which are already under the (830) average, we've used more

ventilation, we have used some clean-burning engines, we have been using the low sulfur fuels, we have been using the advance maintenance practices. We've already used up a lot of the bullets to get to this thing and we're not there. So, the investment for even approaching the (160) is going to be very high for very little change. And especially, -- and our point, -- and really, our point goes to, you know, on a (160) number that, you know, we feel strongly is arbitrary.

MR. SASEEN: But you do look like you're at the (500) intermediate level right now?

MR. WILSON: Uh-huh (positive utterance).

MR. SASEEN: Based on your data.

MR. WILSON: Yes, that's true.

MR. SASEEN: Just one final question. You've mentioned about the EPA certification of engines, and we asked for comments on that. Do you feel that, -- does Morton feel that there, -- whether it be EPA certified, or MSHA certified, that there should be a requirement for some sort of certification with an engine to come in underground versus something that's never been tested?

MR. WILSON: Well, if there is an exposure based standard, I guarantee you that all the mines in the country are going to be doing everything they can,

because it's gonna take that to get down to that low level. And I don't know that there has to be a certification system as such. I mean, I think EPA already has a bunch of things in the works, and for sure, MSHA doesn't need another set. And I think that, you know, all of us will be buying these clean-burning engines. It's just gonna have to be.

MR. SASEEN: Okay, thank you.

MR. WILSON: You're welcome.

MR. TOMB: I'd just like to make one comment from what you said. And I think right now it's important to realize that you have to consider, -- we have to consider feasibility when we propose this. And I think a lot of the, -- not a lot, some of the comments you've made specifically address the feasibility issue. All right, and I think it's important to get data that says, "We can't get down to (200), you know, it's not feasible". I mean, that's, --

MR. WILSON: Mr. Patel, is gonna testify about the Estimator, and he may give you a little more help on that issue.

MR. TOMB: Okay. Thank you.

MR. WILSON: You're welcome.

MR. TOMB: Oh, one other question. I forgot

to ask the one I wanted. And George might have addressed it but I was looking some place else here. In your range of measurements you said you, -- and you came up with measurements 60 to 490 micrograms per cubic meter, can you give me some idea how many measurements those were, and, -- I mean, that's a range, and were they more weighted at (200) or (400), or were, --

MR. PATEL: You're talking about (60) to (80).

MR. WILSON: Is that per miner? Is that total?

MR. PATEL: Per mine.

MR. WILSON: Per mine, oh.

MR. TOMB: Are you going to talk about this in your presentation?

MR. PATEL: Not about the, -- how many samples we took.

MR. TOMB: Oh, okay. Okay.

MR. RODERIQUE: And that information is being correlated right now for a future report.

MR. TOMB: Okay.

MR. RODERIQUE: So, it's being prepared.

MR. TOMB: Okay, good.

MR. RODERIQUE: Along with the NIOSH

information that we just received.

MR. TOMB: Excellent. Okay, that answers my question. Thank you.

MR. WILSON: You're welcome.

DEAN RODERIQUE - MORTON INTERNATIONAL

MR. RODERIQUE: Good morning. My name is Dean Roderique, that's R-O-D-E-R-I-Q-U-E.

Ladies and gentlemen, I appreciate the opportunity to compliment the testimony provided by the Morton Salt Group. My name is Dean Roderique, and I am the Corporate Health and Safety Manager for Morton International. My department provides the majority of the Industrial Hygiene monitoring evaluations for the Morton Salt Group. I am a Certified Industrial Hygienist in Comprehensive Practice, and I am also a Certified Safety Professional, also in Comprehensive Practice, and I've been working in the Occupational Safety and Health field for approximately twenty years now. My testimony today is focused on the Industrial Hygiene aspects of the proposed diesel particulate rule.

MSHA is proposing the use of total carbon as the exposure measure, and we know that total carbon is made up of a variety of materials, such as organic carbon, water, and sulfuric acid. The NIOSH 5040

protocol measures elemental carbon and is not intended to measure total carbon, and the use of this method would lend to interference in the metal and nonmetal mines, due to natural occurring carbonate materials. It is important that these interferences, such as the carbonates and non-diesel particulates, are identified, measured, and subtracted out of the final results so only the diesel particulate is being measured. I believe another disturbing aspect of the NIOSH 5040 method is the inability to have a common elemental carbon standard for the laboratory analysis. Without a standard, laboratories have no basis, other than standard operating procedures, for ensuring accuracies, and this will lead to high variability in results from laboratory to laboratory.

In further discussion of both of the proposed sampling analysis, the submicrometer and respirable dust pose potential sampling errors that could overestimate diesel particulate exposure levels. The potential for error in the submicrometer method is that the assumption is made that all particulate under one micron is diesel particulate, and in metal/nonmetal mines this is not always the case. In the proposed rule, MSHA readily admits to this limitation and states,

> "Because submicrometer respirable particulate can contain particulate material other than diesel particulate, measurements can be subject to interferences from other submicrometer particulate material."

The respirable combustible dust sampling method is based on heating of the combustible carbon in the respirable dust sample. The samples are weighed, and after heating, the samples are weighed again to yield the respirable combustible dust result. Once again, the concern with this method is the potential errors that can result. Along with respirable dust particulate, other compounds can be found in the mines, such as oil mist, unburned diesel fuel, and hydraulic oil, and these compounds may cause the exposure to diesel particulate to be overestimated. This finding is identified in works published by Grenier and Gangal, 1998, and in review of a similar work by Gangal and Dainty in 1993. It was stated that estimates for non-diesel particulate components in the respirable dust actually vary between ten and fifty percent. Once again, the variability in sample analysis can play a significant role in identifying the exposure levels.

The use of area monitoring for compliance and miner exposure determinations is certainly not an industrial hygiene method that I can concur with. The MSHA area sampling protocol can be put anywhere in the mine and will not accurately measure the level of personal exposure. Our sampling in mines certainly supports and verifies this. Personal monitoring and full shift monitoring is the only accurate way that MSHA can define and evaluate exposures. In many research and investigative studies, -- some I've participated in, -- NIOSH has used and advocated the use of personal samples over the years as the only accurate way to evaluate employee exposures. To provide a good indication of a mine worker's exposure, we must sample in the breathing zone of the worker and, when possible, always conduct full shift sampling.

In conclusion to my above comments, I believe it is very important for additional work to be done prior to any regulation to identify a better sampling method and sampling analysis for gathering accurate employee exposure information. Personal sampling is preferred to area sampling for providing meaningful employee exposure information to be shared with the employee. As noted above, the interferences and

sampling variability must be eliminated or accounted for to better understand and control diesel particulates. Without this, the industrial hygiene sampling outlined in this proposed rule will provide us with little useful information and tend only to confuse the real issue of working on reducing and controlling diesel exhaust in our mines.

I would like to thank MSHA for this opportunity to present Morton's industrial hygiene comments on this very important issue. Thank you.

MR. TOMB: Thank you. Any questions?

(No Verbal Response)

MR. TOMB: I have one. If your boss came to you and said, "I want you to go out and tell me what my people are exposed to, with respect to diesel particulate in the mines," what, or how would you do that with what's out there today?

MR. RODERIQUE: First of all, I'd have to do a research on the analytical methods available. And certainly, that's why we're using the NIOSH 5040 method right now, because that's what's available. We've found in our testing, -- we found some interferences, salt kell in particular, we've seen some organic carbon still in this area. We know, -- and we have to refine that

and we have to work on it. We have to get a method that will work for us without the complications and interferences.

So, first of all, we can look at what's out there, you look at it, you evaluate it, -- you know, you've got to do your recognition evaluation and control. So, right now, you know, I think we've recognized something to monitor, like you've just mentioned, we're still in the evaluation. What can we use to properly evaluate this? I don't believe we're there yet. We need to continue to work on it. You may look at me and say, "Dean, do you have an answer for me?" No, I don't. I know there's a lot of people working on and they're continuing to work on it. What we need to come up with a tried and true method, so when we look at a miner in the face and say, "This is the result," we'll know what we're talking about without the variability. So, like I said, I think we're in the recognition stage, working on the evaluation, and that's how I would go after that.

MR. TOMB: Okay, thank you.

MR. RODERIQUE: You're welcome.

MR. TURCIC: Do you have any specifics, Dean, in which you were, -- where you point out that the NIOSH

method measures elemental carbon and is not intended to measure the total carbon? Is there any information you could submit for the record that would, you know, expand on that?

MR. RODERIQUE: We are going to make our final comments at the end, and I believe, you know, with the NIOSH information that we have, and the presentations that we've seen, in particular, the recent Navastar (phonetic) presentation, we provide those copies.

MR. TURCIC: Okay, great.

MR. TOMB: One other question. In the samples that have been collected in your mines, has it been possible to identify and correct for the interferences that you've mentioned that are potentially there? Such as carbonates and things like that?

MR. RODERIQUE: I'm not prepared to answer that question, but in review of literature, you know, the acid washing in particular, we've seen, -- there is a considerable amount of err there, at least I've been reading around 50%. So, you know, I'm a State of Missouri guy, show me. I don't have that information in front of me, so I don't want to make those comments. But I have read that up to 50% with the acid washing is

still not going to eliminate that 100%.

MR. TOMB: Okay. This is a favor now. Could you supply that information to us on, -- what you're referring to, where they're referencing the 50%?

MR. RODERIQUE: That is going to be commented on with the MARG group. And Dr. Cole will be making comments on that.

MR. TOMB: Okay. Okay, that will be great. Thank you very much.

MR. RODERIQUE: You're welcome.

C. C. PATEL - MORTON SALT DIVISION

MR. PATEL: I'm Pat Patel, P-A-T-E-L, Manager of Mining Engineering for the Morton Salt Division of Morton International, Incorporation. In continuation of the previous Morton testimony, I would like to discuss the use of the MSHA Estimator. Morton has attempted to use MSHA Estimator to calculate what we have to do to bring our exposure limits below those in the proposed rule.

Our Weeks Island Mine has a measured level of 230 micrograms of total carbon, with the ventilation rate of 165 cfm/hp. The estimated diesel horsepower usage per shift is approximately 2300. This mine has 475 hp LHD(s) with clean-burning engines. Our Fairport

Mine has a measured level of 490 micrograms of total carbon with the ventilation rate of 100 cfm/hp. It uses approximately 1950 diesel horsepower per shift. The ventilation in both mines has been upgraded to optimum levels. These reported total carbon levels are assumed to be accurate and do not consider known interferences.

MSHA has developed a model for estimation of diesel particulate concentration in an underground mine. The reduction in these concentrations is achieved through control measures including additional ventilation, low emission engines, after-treatment devices, horsepower reductions, and shortened work hours. The model offers two alternative methods for determining the control measures necessary to achieve compliance. The first approach starts with a measured dpm concentration level and subsequently reduces the level with the aforementioned control measures. The second approach develops a concentration level by estimating emissions from existing engines and hours used in a shift.

Morton made several assumptions in using the estimator. Engine emission rates for the existing and new engines were based on MSHA's given range for different types of engines. Catalytic convertor

efficiency was assumed in the mid-range of the MSHA numbers, while the soot filter efficiency was assumed at the higher end of the MSHA suggested range. We have multiplied the measured readings by 1.3 to allow for the 5040 method variation. The thirty percent is the error factor we experienced in our mines using the 5040 method.

The Estimator shows what level of after-treatment and engine replacement would be necessary to meet the proposed rule limits. In our calculations, we used both alternatives, measured and estimated, to compare exposure levels. Our findings were: The Weeks Island Mine has one of the lowest exposure levels of any of the mines in the NIOSH study. All equipment in the mine is diesel powered and ventilation provides a significantly higher cfm/hp ratio. Despite these advantages, the model indicates that Morton will be required to fit every piece of machinery with a catalytic convertor and a soot filter to comply with the proposed final level based on the measured initial level. With a measured level of 490 micrograms and approximately 100 cfm/hp at the Fairport Mine, the model would require replacing all engines, if not required to replace entire machines, and installing catalytic

convertors and soot filters on all equipment except transportation vehicles, which is pick-ups and tractors and whatever. Even with these changes, Fairport does not meet the 160 microgram limit. Despite dpm levels which are thirty percent and sixty percent below the MSHA's stated average level of 830 micrograms, the model suggests dramatic and costly measures to comply with the proposed rule. Since 830 micrograms is stated as MSHA average level, we question how any mine with higher levels of dpm will meet the final standard of 160 micrograms.

MSHA suggests that the measured sample level approach is better because it is an actual number. We question this because we do not have sufficient data and measurement will vary from location to location in a mine. These results will also vary by the day of a week and time to time. This is why Morton is opposed to citing an operator based on a single shift sample level over the limit. These findings have raised the following questions regarding the calculated final levels: How would one assign accurate duty cycle to each piece of machinery including transportation vehicles, if you use your estimated level? Which alternative, measured or estimated, should a mine use to

plan a control strategy?

The Estimator allows for an environmental background level of 50 micrograms, but does not allow for the 5040 method precision variation and the filter media interference. Our testing, according to independent expert analysis, indicates the 5040 method precision to be within plus or minus thirty percent and for this reason, we have increased the measured levels by thirty percent. Our experts have also found that the filter media used in the NIOSH parallel sampling showed a background level of 53 micrograms, which MSHA has not allowed for in the Estimator.

Each older engine must be tested for an accurate emission rate to input accurate data for use of the estimator.

Our conclusions based on using the MSHA estimator for two of our mines are as follows: First, the Estimator is only as good as the accuracy of the input data. Assumptions on horsepower usage, duty cycle, and emission levels of old engines are difficult to estimate accurately.

Second, in order to insure the compliance, a company must use the most conservative method for developing a control strategy.

Third, using the Estimator at our lowest exposure level, which is Weeks Island, would require us to change out all the large engines even though we are only 80 micrograms above the limit. Yet, when we change out these engines, the reductions is only from 164 micrograms to 156 micrograms. This is a large investment for the minor reduction obtained.

Fourth, according to the Estimator, it would be difficult, if not impossible, to meet the standard at an exposure level higher than 830 micrograms, even after replacing old engines and installing catalytic convertors and soot filters on all major pieces of machinery. Indeed, at the Fairport Mine where exposure level is only 490 micrograms, we will be faced with a thirty percent reduction in tonnage, the construction of a twenty million dollar shaft or an unknown multi-million dollar conversion to electrics to meet the proposed rule.

Fifth, it will be impractical to use soot filters on light-duty-cycle engines; as an example, roofbolters, powder rigs, cleanup FEL(s), because of the low exhaust temperature, -- let me back up. It will be impractical to use soot filters on light-duty-cycle engines because of the low exposure temperature, and

therefore, complying with the standard may not be possible without major fleet changes. The cost for these major changes would have a significantly higher cost impact than that calculated by the National Mining Association's independent consultant.

And finally, the Estimator should contain provisions for filter media interference, local ambient background, other confounders, such as smoking and carbonaceous ores specific to the local mine. That concludes my point.

MR. TOMB: Okay. Thank you for your presentation. Any questions?

MR. TURCIC: I have one. In your conclusion where you talked about the plus or minus 30% of the sampling method, it would be helpful if you could explain how you came up with the 30%?

MR. PATEL: Okay.

MR. TURCIC: Is that the total accuracy that you're assuming, or is that just the precision? And, you know, how you did it, so we have some idea of what, --

MR. PATEL: When we sampled the mine with NIOSH and turned over those samples, to plaintiff (sic), we had Boric (phonetic), -- Boric Company was putting

all the data together. And according to the data of the four or five mines that we have in the NIOSH study, where my group is concerned, they have told us that they have found variations of plus/minus 30%.

MR. TURCIC: So, it's really, -- that's based on actual side-by-side type sampling?

MR. PATEL: Yes.

MR. TURCIC: Okay.

MR. KOGUT: I think we'd appreciate it in your post-hearing comments so we can clarify how that 30% was derived, because the way you've stated it just now, it sounds like that was the maximum deviation that was found within a range.

MR. PATEL: Again, I suppose that the comments that will be provided on behalf of the Mining Association and MARG, that information will be included in that.

MR. TOMB: One other question relative to the sampling, and this has been discussed in the preceding presentations also. And it kept being brought up that the filters that are used have a background of 53 micrograms per cubic meter. In a standard analytical procedure where you have a blank, wouldn't that be subtracted off the sample determination?

MR. PATEL: At the Weeks Island Mine we were told that it was corrected for it, at the Fairport Mine it was not corrected.

MR. TOMB: Okay. But, I'm just asking if that wouldn't be the typical procedure that would be used to correct that? That's not gonna be something that, -- I mean, that's an easy interference to correct for, --

MR. PATEL: Right.

MR. TOMB: -- of all the ones that you've talked about?

MR. PATEL: Yeah.

MR. RODERIQUE: Yeah, we always submit blanks. That was a problem in a previous sample, -- a problem.

MR. TOMB: Okay.

MR. WILSON: That (53) was an average.

MR. RODERIQUE: It was a variable.

MR. TOMB: Well, it can be variable, but, --

MR. RODERIQUE: Right.

MR. TOMB: -- with a set of, -- if you have a blank that goes with the sample you've collected, certainly the analytical procedure requires for subtracting that off. You understand what I'm saying?

It's assumed that whatever variability you have on that blank is also applying to the filter.

MR. RODERIQUE: The blanks have been variable and that's been one of the concerns, -- the previous concern that Pat was eluding to was there was no blanks associated with them, were not corrected for.

MR. TOMB: Okay.

MR. RODERIQUE: Okay?

MR. TOMB: Yeah, okay. Well, I just, -- I mean, I kept seeing that, and I didn't know whether, --

MR. RODERIQUE: Right.

MR. TOMB: -- I mean, the standard procedure would be to subtract that off any sample that you had.

MR. RODERIQUE: Yes.

MR. TOMB: So, on the Estimator, I think it would be very helpful if you could provide, -- you don't have to do it for all of them, but take one of your examples and just provide the specifics on the assumptions that you made in working through the Estimator. Sort of like what's in the preamble now, but it will be specific for your mine, so that we could take a look at that. And, you know, then we could look at the ventilation figure that you applied and the efficiencies you applied to the equipment and, -- I

mean, although you've mentioned them in here, it would help us if you could take that and just give us, -- just let us see the values you plugged in.

MR. PATEL: We intend to do that for our calculations, with explanation as to how we arrived at those.

MR. TOMB: Yeah. That would be excellent if we could have that. Okay, I think that's all the questions I have. Okay, George.

MR. SASEEN: Either Mr. Wilson or, -- and I kind of asked it when I asked you about the $20,000,000.00 cost to breakdown of what's in, -- you know, for going from your current levels down to (160). It looks like you've done a lot of engine changeover, because it keeps, -- the theme keeps coming through that Morton has done a lot on buying the latest engines for the vehicles. Will you be specific in there on like what the retrofit costs were, when you have to go from one engine to another engine? Or, you know, how much costs is involved in machinery to put that in? 'Cause sometimes it's an easy, you know, pull one bolt and bolt one in, and sometimes it's a major cost, -- you know, more costs to put a different engine in. Will we see some of that data?

MR. PATEL: We have, while estimating the costs, we assumed that both the engines we can just replace. Although, there was some engineering that would be required for our fleet. But we also know that at one of our mines that we asked for engine replacement from a dealer, and the cost was like, over a $150,000,00. So, at that point, the question comes, whether we replace the machines or replace the engines. And we have to go through all that detail to select a detailed estimated fee.

MR. WILSON: You know, George, if we have an LHD that costs, say, $900,000.00, and I've got a sink, -- well, first of all, I have to attempt to get from the manufacturer the engineering to reconfigure that engine compartment for a different engine. We've had difficulty getting that. Some machines you can do that. An attempt about a year ago, or maybe two years ago, to get an engine manufacturer to, -- or a machine manufacturer to devout the engineering time just to design that modification, we couldn't get that to happen. So, assuming that you could get the engineering done, just the field change in an old machine, let's say that half its useful life is gone and I'm gonna spend $150,000.00 or something on a half-used up machine. I

mean, I think mines are going to change-out large parts of their fleet, really, in the time that a standard, you know, would be implemented toward the five year or whatever it might end up being. I think the costs, -- you know, of just thinking that we're going to swap engines like we're swapping shoes or something, is very shortsighted. I've been to mine managers at a couple of these mines and I've tried to make some of these changes with Maintenance Departments, with contractors, and the end result of changing out an engine or a component, and not having a completely factory made machine, can be a real bastard situation, to be frank. It's not something that a manager looks forward to running a fleet that's been modified extensively. It's difficult. The reliability, if the availability of the equipment is bad. So, I think Morton is probably looking at, -- we're gonna have to change fleets, not just change engines.

MR. SASEEN: Just a quick, -- you kind of mentioned, -- do you have kind of an estimated, -- what the life of the machines are, the LHD(s) and trucks, from Morton's viewpoint?

MR. WILSON: We could give you some feel for that in our written comments, but I would say, just if

you want it off the top of my head, about, --

MR. SASEEN: No, written is fine.

MR. WILSON: -- okay, then I'll do that for you.

MR. SASEEN: Okay.

MR. TOMB: Okay. Thank you for your presentation. The behind the scene comments up here is that we need to take a fifteen minute break. So, why don't we take a fifteen minute break.

(Whereupon, at 10:45 a.m., the hearing was recessed, to reconvene this same day at 11:05 a.m.)

MR. TOMB: Our next presenter will be Mr. Kaszniak from IMC Global.

MARK KASZNIAK - IMC GLOBAL

MR. KASZNIAK: Thank you, Chairman, and members of the MSHA panel. I am Mark Kaszniak, that's K-A-S-Z-N-I-A-K, I'm the Director of Health and Safety for IMC Global.

IMC Global appreciates this opportunity to appear today to present its views on MSHA's proposed rule on Diesel Particulate Matter Exposure of Underground Metal and Nonmetal Miners.

IMC Global has already submitted to MSHA preliminary written comments dated April 30, 1999, on

the proposed rule and plans on filing supplemental written comments by the close of the rulemaking record on July 26, 1999. IMC Global is also an active member in several industry and trade groups, such as the National Mining Association, the Salt Institute, the MARG Diesel Coalition, and the DEEP program, and thus supports the oral testimony and written comments already provided or to be provided by these entities.

IMC Global is one of the world's leading producers of phosphate and potash crop nutrients, animal feed ingredients, salt, and soda ash with annual revenues of approximately three billion dollars and approximately 10,000 employees working in U.S., Canadian, European, and Australian mining and manufacturing locations.

Our corporation has a number of producing underground shaft and solution potash and salt mines, as well as producing surface phosphate and soda ash mines. Three underground U.S. mines are subject to the Federal Mine Safety and Health Act of 1977 and thus would be directly affected by the proposed rule.

As MSHA is aware, IMC Global has been interested in the subject of employee exposures to diesel particulate matter in underground metal/nonmetal

mines for a number of years. For over twenty years, IMC has worked cooperatively with MSHA on various projects related to air quality issues in underground mines. In the last ten years, these cooperative projects have included diesel particulate matter. The most recent examples are: In 1996, MSHA sampled for diesel particulate matter using respirable combustible dust, submicron impactor, and elemental carbon sampling methods in one of IMC's underground potash mines.

In 1997, MSHA and IMC conducted a study to evaluate the effectiveness of oxidation catalytic converters in underground mining operation.

And as recently as in 1998, IMC participated in the development of MSHA's Diesel Toolbox.

Moreover, IMC Global has been active in the United States, Canada, and the United Kingdom, in other areas pertaining to diesel exhaust and particulate where MSHA might not be aware. A summary of our activities in these areas are as follows: In the U.S., IMC Global has two mines participating in the joint NIOSH/NCI cancer mortality study. Furthermore, some of our underground mines have developed sophisticated engine maintenance programs that include periodic engine emissions testing. One mine is even testing engines using a dynamometer to

measure emissions under load after diesel engines are rebuilt.

In Canada, our IMC Kalium business unit is participating as a member and financial contributor to the research being performed by the Diesel Emissions Elimination Program, also known as (DEEP). In addition, we have worked cooperatively with the Mines Inspectorate of the Occupational Safety and Health Division in the Province of Saskatchewan to evaluate different methods of monitoring diesel particulates in underground mines.

In the United Kingdom, our IMC Salt business unit is working cooperatively with the Mines Branch of the Health and Safety Executive on sampling diesel particulates using coulometric analysis and is currently investigating a correlation between those samples and optical density readings of filters.

Today I intend to confine my comments to three specific areas of the proposed rule: (1) The human epidemiological evidence; (2) the Genotoxicological evidence; and (3) the determination of exposure concentrations for various occupations presented in the proposed rule.

As pertaining to the Human Epidemiological Evidence: While IMC Global shares MSHA's concerns about

the possible health effects to underground metal/nonmetal miners of exposures to diesel particulate matter, IMC Global believes that the Agency's action to regulate dpm exposures at this time is premature and is not based on sound scientific evidence. After reading and critically reviewing most of the forty-three epidemiological studies that MSHA has cited in the proposed rule, IMC Global also believes that the Agency has failed to establish a relationship between exposure to diesel particulate matter and lung cancer.

Recent research and critical review by noted scientists and epidemiologists has shown that the underlying animal and human data in these cancer studies has serious flaws and/or biases. IMC Global knows that MSHA is also aware of the limitations in this data based on statements contained in the proposed rule and attendance by the Agency's representatives of the Health Effects Institute's Diesel Workshop held in March of this year at Stone Mountain, Georgia, where the limitations of these studies were discussed at length.

I will provide specific examples to highlight our concerns pertaining to this issue: First, the results of the two comprehensive "independent" meta-analyzes that MSHA states in the proposed rule that the

Agency is relying on as its basis for showing lung cancer effects in humans are biased, have critical flaws and are not truly independent. For example, both meta-analyses suffer from publication and selection biases because they both used only studies published in the literature, excluded certain studies without adequate explanation and did not include other relevant studies, especially those pertaining to miners. Both studies acknowledge that exposure misclassifications are a potential source of error as no diesel exposures were actually measured in any study analyzed under either of these meta-analyses. Both meta-analyses do not adequately control smoking as a major confounder as some of the studies analyzed did not determine smoking status, while others did not adequately control for it. The two meta-analyses fail to show a linear dose-response relationship, which argues against a link between lung cancer and diesel particulate matter exposure, especially due to the orders of magnitude exposure ranges studied. Finally, the meta-analyses are not truly independent, even though they were published by, -- one was published by a state agency, while the other was published in a peer-reviewed journal, because they share a co-author, and both studies were funded by

the State of California.

MSHA has reviewed certain cohort and case-control studies in the proposed rule, but has failed to adequately discuss criticisms to positive studies as well as discuss other studies that show no link between diesel particulate exposure and cancer. In IMC Global's review of the scientific literature, we found a number of valid studies that should be reviewed by MSHA in order to present a balanced picture of the human epidemiological data. A listing of these studies is contained in our preliminary written comments to the Agency.

MSHA has quoted only those peer-reviewed studies in the scientific literature in the proposed rule that support the Agency's position, while either not identifying or dismissing the views of other authors who hold contrary opinions. In our review of the scientific literature, IMC Global easily found several researchers, organizations, such as the World Health Organization and even the National Cancer Institute, and even courts that warn about not adequately controlling confounders, especially smoking, and the problem with relying on studies with relative risks less than 2.0. Based on this information, the epidemiological studies

that MSHA cites as showing a relationship between lung cancer and diesel particulate matter exposure might, in fact, be actually showing an artificial association and a level of relative risk due simply to natural variation, not a cancer effect.

At the recent MSHA dpm public hearing in Albuquerque, New Mexico, a member of the MSHA panel cited six cohort and/or case-control studies that the Agency now appears to be relying upon as these studies seem to show a relative risk greater than 2.0. Of the six studies mentioned by MSHA at the Albuquerque meeting, four were discounted by MSHA in the proposed rule as either not being statistically significant; given little weight due to potential confounding by occupational exposures by other carcinogens; or discounted because they had very few cases and the extent of diesel exposure was not reported. Prior to this hearing, IMC Global has had the opportunity to obtain and thoroughly review four of the six studies mentioned by MSHA at the Albuquerque meeting. The results of our review are as follows: The study of Lerchen, et al. entitled "Lung Cancer and Occupation in New Mexico," is a familiar one, as we have active mining operations in that state. While the study shows an odds

ratio of 2.1 for copper, lead, zinc, gold, and silver, molybdenum, coal, clay, and potash miners corrected for age, ethnicity, and smoking, the study population was relatively small; four cases with twenty controls, and the 95 percent confidence level ranges from 1.0 percent to 4.1 percent. As the confidence level includes 1.0, this shows that the quality of the data is not good enough to determine whether there is an increase, decrease, or no change in the risk. I would also like to point out that there are probably exposure misclassification errors in this study, as the odds ratio for subjects exposed solely to diesel exhaust fumes was calculated to be only 0.6, ranging from 0.2 to 1.6, of the 95 percent classification, -- excuse me, -- 95 percent confidence level, with a total of seven cases and thirteen controls for all industries studied.

The study by Waxweiler et al. entitled "Mortality of Potash Workers" is also familiar to IMC Global, as we have many active underground potash mines. This study brings up two key facts: First, the study states that no causes of death were significantly different between miners who worked in dieselized mines and those who worked in other mines. Second, the study indicates that not only do a higher percent of potash

workers smoke, but that they smoke at a heavier rate than United States males. This factor alone would be expected to increase the number of deaths due to cancer, but a lack of excess lung cancer by potash workers was demonstrated in this study.

The study by Benhamou et al. entitled "Occupational Risk Factors of Lung Cancer in A French Case-Control Study" includes a category of miners and quarrymen. The study appears to be well-adjusted for smoking as a confounder. While the relative risk was reported as 2.14 with a ninety-five percent confidence level ranging from 1.07 to 4.31, we note that only one or two controls were used for each case. In fact, for the miners and quarrymen category, only twenty controls were used for the twenty-two cases of observed disease. IMC Global believes that this study suffers from control bias with respect to the miners and quarrymen category as the normal ratio of cases to controls is normally one to four.

The study by Boffetta et al. entitled "Diesel Exhaust Exposure and Mortality Among Males in the American Cancer Society Prospective Study," also includes a miner category of some 2,034 subjects. Smoking was treated in a simplistic way in this study by

using three categories: smokers, ex-smokers, and non-smokers. The relative risk for miners is given as 2.67 with a ninety-five percent confidence level ranging from 1.63 to 4.37. However, a percentage of miners who did not state that they had diesel exhaust exposure was 44.2%. Thus, IMC Global considers that this study, with respect to miners, suffers from exposure misclassification errors and a lack of control for a major confounder, namely, smoking. The authors of this study acknowledge that the unknown diesel exposure status may introduce a substantial bias.

5. Of course, the previous listed studies suffer from the same flaw as all human epidemiological studies to date, in that they all lack actual exposure data to diesel exhaust and thus the potential for misclassification of exposure groups. We just don't know the levels of exposure, and we also don't know for what periods of time people were being exposed or not being exposed.

MSHA is relying on other case-control studies that are biased. For example, MSHA cites the "Garshick Railroad Studies" as two of the most comprehensive, complete, and well-controlled studies available that also took care to address potential confounding by

tobacco smoke and asbestos. However, a reanalysis of these studies by the EPA, other researchers, and even Dr. Garshick himself, have revealed many flaws. Upon reanalysis, all have concluded that the reported positive dose-response association was a consequence of the modeling assumptions made, rather than being implied by the data.

Based on the examples that I have just provided, IMC Global believes that the best conclusion that MSHA can draw from the available human epidemiological evidence is that any relationship between exposure to diesel particulates and lung cancer is unclear. Many of the studies cited in the proposed rule are either not statistically significant or contain serious flaws and biases. No amount of number crunching using meta-analysis techniques can overcome the limitations of an inadequate or a flawed study. IMC Global believes that the current NIOSH/NCI cancer mortality study will resolve many of the shortcomings in the previous human epidemiological literature and encourages MSHA to wait until preliminary results are published before issuing a final rule on diesel particulate matter.

In the interim, IMC Global encourages MSHA to

perform formal quantitative tests or develop a model for a quantitative risk assessment using all available human epidemiological data. Key data sets should be reanalyzed using model-free statistical methods and/or very flexible classes of models to avoid model bias. The results from any model used to estimate a quantitative effect of diesel particulate matter exposure on lung cancer risk should then be published in the Federal Register with a full set of model diagnostics indicating how well it fits the data to which it has been applied, especially in comparison to other models. This will allow for adequate review by mining companies, researchers, and epidemiologists interested in this issue.

In regards to the Genotoxicological Evidence: After reviewing the genotoxicological studies cited in the proposed rule and conducting our own literature search, IMC Global believes that MSHA is relying on studies that are flawed and biased. I will again provide examples to illustrate our concerns: Production of tumors in rats exposed to diesel particulate matter is a result of lung overload, a phenomenon unique to the rat lung, as opposed to the lungs of other rodents and mammals. Theories that the overload phenomenon "mask"

the potential of carcinogenicity in either rats or humans as MSHA has suggested in the proposed rule are now being discounted by researchers as evidenced by the remarks last year by the Clean Air Science Advisory Board in reviewing the EPA's diesel health effect document.

The studies conducted by Wallace, Keane, and Gu, cited by MSHA in the proposed rule showing that the diesel exhaust particulates can be extracted in the lung via laboratory experiments using simulated body tissues have been challenged by parallel studies from other laboratories showing that organic materials dissociate from particles much more slowly in vivo than when extracted by organic solvents in vitro and the serum and tissue cytosols significantly reduce the cytotoxicity of diesel particle extracts.

The studies conducted by Wallace cited by MSHA in the proposed rule using aged diesel samples from the inside tail pipes do not simulate the real character of particles formed during the actual combustion process because other researchers have discovered newly formed mutagens that were not present in the fresh examples.

Recent 1997 studies on DNA adducts in underground miners showed no association between DNA

adduct elevations and diesel particulate exposures despite the evidence presented by MSHA in the proposed rule for garage workers, bus workers, and diesel forklift drivers using older studies.

Based on the examples I have just provided, IMC Global believes that inconsistent data from recent studies shows that it is premature for MSHA to draw conclusions based on current DNA adduct research and that the unrealistic character of the in vitro experiments and the rat overload mechanism cannot be used to support MSHA's case for a casual connection between lung cancer and exposure to diesel exhaust particulate in animal studies. IMC Global believes that further research is needed to show the effects of diesel exhaust particulate of the human body.

With regard to the Determination of Exposure Concentrations for Various Occupations: In the proposed rule, MSHA has developed a bar graph (Figure III-4) comparing the range of average diesel particulate exposures between dock workers, truck drivers, railroad workers, underground coal miners, underground metal/nonmetal miners, surface miners, and ambient air. After a careful review of Figure III-4 and the assumptions MSHA used to develop it, IMC Global is

concerned that MSHA is applying an "apples to oranges" approach when trying to compare underground miner exposures to diesel particulate matter to that of other occupations.

IMC Global does not agree with MSHA's blanket assertion that submicrometer elemental carbon constitutes approximately fifty percent by mass of the whole diesel particulate. Rather, the percentage of elemental carbon in total diesel particulate matter fluctuates. Major contributors to this fluctuation are: engine type, duty cycle, fuel, lube oil consumption, state of engine maintenance and the presence or absence of an emission control devices. Further, the mass percentage that MSHA is using for the submicrometer elemental carbon is based solely on measurements taken in underground coal mines. MSHA has presented no evidence in the proposed rule showing that this mass percentage holds true for diesel engines used on docks, in trucks hauling loads over roadways, in railroad engines pulling trains, in underground metal/nonmetal mines, in surface mines, or in ambient air.

In fact, elemental carbon mass percentages in diesel particulate matter vary between 38% and 85% based on estimates by Birch and Carey, developers of the NIOSH

5040 Method. Recent research in Korea shows that diesel particulate emissions between on-road diesel equipment and underground mining diesel equipment varies by at least a factor of three and is directly related to engine speed. Based on this information, MSHA's estimates in Figure III-4 of the proposed rule are untrue and misleading.

Furthermore, the information presented by MSHA concerning employee exposure levels in the twenty-five metal/nonmetal mines using RCD and submicrometer sampling and analysis methods is also suspect.

First, MSHA has sampled twenty-five of 260 (9.6%) of all metal/nonmetal mines using either the RCD or submicrometer sampling methods to determine diesel particulate matter exposures. Commodities represented in this sampling included only salt, limestone, potash, soda ash, trona, gypsum, copper, lead, and zinc. As MSHA has estimated in the proposed rule, there are thirty-five different nonmetal commodities being mined alone, not to mention all the metals. IMC Global questions how this sampling can be representative of the entire metal/nonmetal mining sector. MSHA has not even gathered enough data to have a single diesel particulate matter measurement for each type of commodity being

mined underground.

Second, the two mines monitored using the submicrometer sampling method may have errors over 20% because the submicrometer respirable particulate can contain particulate material that is not diesel particulate. Limited sampling conducted in underground nonmetal mines (i.e. shale, soda ash, and quartzite) has shown that mass concentration size distributions are not primarily bipolar like in coal mines.

Third, the RCD sample results from the other twenty-three mines may have errors up to 50% due to interference, as some types of mineral dusts are suspected to interfere with the ashing method. Further research by CANMET is needed before this problem can be resolved.

Fourth, 23% of the samples taken in underground metal/nonmetal mines were area samples rather than breathing zone samples. Research has shown that, due to stratification in underground mines, the concentration of diesel particulate matter in underground openings will be affected by the location of the sampling instruments. If accurate measures of employee exposures are needed for risk assessments, personal sampling needs to be conducted in the miners'

breathing zone. NIOSH has advocated personal over area sampling since at least 1977 for exactly this reason.

IMC Global believes that it is MSHA's burden to prove to the regulated community that the data collected by the agency during the risk assessment is correct, repeatable, verifiable, and free from significant errors. In the area of exposure concentrations, the Agency has failed to do this. Thus, IMC Global recommends that the Agency do the following: Perform additional employee personal exposure monitoring in the metal/nonmetal mining sector to show that diesel particulate matter exposures are representative of the entire industry, not just a smattering of the mines, before promulgating regulations that will affect the entire industry.

Use better sampling methods for obtaining personal exposure monitoring data. The methods used to date in the past are non-specific to diesel particulate and introduce unacceptable sampling and analytical errors, which make them unreliable.

Evaluate the impact of ore interference on the sampling method used for gathering diesel particulate matter exposure data. Many mined nonmetal ores are likely to produce interference based on carbon-based ore

compositions or particle size distributions. A valid sampling method must be available for all metal/nonmetal commodities.

Obtain a better correlation between diesel particulate mass and elemental carbon before attempting to make comparisons across occupations. Researchers have shown that the mass percentage of elemental carbon in diesel particulate matter is not constant, but a function of many variables. Additional research, measurements, and statistical analysis is needed before an accurate correlation can be established.

In closing, IMC Global believes that MSHA, NIOSH, and the mining companies need to work together to procure new data and abandon the misapplication of old outdated studies containing erroneous information, critical flaws, and biases. We all need to learn more about diesel particulate matter generation, employee exposures, potential health implications, sampling techniques, and control technologies. IMC Global stands ready to work with MSHA to develop a more realistic strategy based on sound science than what is currently being proposed. Thank you.

MR. TOMB: Thank you for your presentation. Questions?

MR. KOGUT: Yeah. I want to thank you for both your presentation and for the pre-hearing comments which you submitted, which I found to be, -- it seemed like a lot of thought and work went into them, and really appreciate all the detailed effort that you put into preparing those comments. I do have a few questions and request for some clarification. Let me start with some of the things you said later in the presentation and then work backwards. One is that, -- and this is on something, -- a question or a request for clarification that I have, not just from you, but from various other presenters that have made this a sort of theme in several of the presentations. And they said that NIOSH for many, many years has advocated the use of personal samples as opposed to area samples, and also, I think some of the presenters also went a little beyond that and said that they advocated the use of multiple samples as opposed to single samples. Do you have, -- or could you submit something into the record that shows the context in which those sorts of recommendations were made? In other words, were they, -- when NIOSH has made those sorts of recommendations were they talking about sampling done with the objective of enforcing a FEL, or were they talking about sampling that was done, -- that

should be done in support of establishing or evaluating a health risk or doing a risk assessment? In other words, were they trying, -- were they talking about using, -- advocating personal as opposed to area samples for the purpose of establishing miners, -- estimating lifetime exposure in order to establish a health risk, which is really quite a different objective from the objective of enforcing a limit once it's been established? Or more generally, the objective of protecting a miner? In other words, I see two quite different objectives there, one is to protect an individual miner to make sure that his lifetime exposure level never exceeds some certain amount, for which it might be more, -- certainly more justifiable to set an area limit because of the area is limited below a certain level, then you are ensuring that any miner working in that area, that his personal samples would not exceed that limit. So it's a more conservative way of protecting a miner than personal sampling, which might not be feasible in an enforcement context in some cases. So, do you have any knowledge of NIOSH's objective when they made these sorts of recommendations?

MR. KASZNIAK: Yes, and we'll be happy to provide those types of details in our final submissions.

MR. KOGUT: Okay. And I'd also ask some of the other commentors (sic) that have made similar statements about NIOSH, whether they could provide us with any actual references where NIOSH has advocated personal or multiple samples, as opposed to single or area samples for enforcement purposes. Then, again, working my way sort of backwards through your presentation, you made, -- both in your presentation and in your written comments, you discussed Figure III-4 in the proposal and made the point that in working up the comparison in that figure, we, -- MSHA based the conversion for some of the occupations in which the original measurements were done in elemental carbon units in order to convert those to diesel particulate we used an average ratio of two to one for diesel particulate to elemental carbon. And I'm not quite sure I understand the relevance of your comments about the variability in elemental carbon to diesel particulate, which I think that as you're aware, the Agency recognizes that variability, and that was one of the reasons why we chose total carbon rather than elemental carbon as the method that we were proposing. But even granting that there could be a great deal of variability in the ratio, depending on the duty-cycle or

the operating conditions of the equipment, even if the, -- even if there is a great deal of variability in the ratio, still taken over a period of time there's still an average in that variability, so that the, -- you know, the ratio might vary as you said, from 35% to 85%, but that's still consistent with the possibility that on average the ratio is approximately 50%. So that in comparing exposures between different industries, it still seems to me that, -- you know, you could make some sense of the concept of using that ration as a conversion factor if all you're doing is comparing the average dpm concentration to which miners in different industries are exposed. That would be a comparison of the average concentration. So, I'm not sure I understand the relevance of any variability that you might see?

MR. KASZNIAK: Well, with regard to the relevance, -- and we can provide further comments in our final comments, the problem that we have faced, -- that IMC Global as well as you face, is that, you know, data for different types of diesel engines just aren't published in terms of the amount of particulate matter actually being emitted. In fact, we have tried to obtain information from our mining diesel engine

manufacturers on some of the particulate matter displaced in some of these engines and it's just not readily available. Either they have not monitored for them themselves, or they don't know. Those estimates I provided were based on the research done by Birch and Carey on the 5040 Method, and those were just based on a very limited data set using different levels. In actuality, we don't know what the percentages are. That was the range of limited areas that Birch and Carey looked at, and we have some more limited evidence with trucks on the highway, because emissions have been tested by EPA for a great deal of time. But when you're talking about fork-lift trucks and other different types of exposure we really don't know where that data is. If you have that data I would certainly like to see it. I haven't been able to find any of it. We've been looking for it. IMC Global is a crop nutrient producer, we have vehicles on the road, we are vastly interested in dpm research in our corporation because we do a lot of transportation of corp nutrients throughout the country. In affects all areas of our business, not just our mining area. And so, we have been researching this area for a fairly long period of time and keeping up with EPA's research in this area, and we talk to engine

manufacturers and the data just isn't available. And so, without knowing what the actual numbers are it's very hard for me to, you know, get a warm, comfortable feeling around your estimates, because I can't go back and independently verify that information from some other way.

MR. KOGUT: But indicated that you do have available, -- do you have any data that shows that 50% as an average is wildly wrong?

MR. KASZNIAK: I can't vouch for the 50% as an average. I don't know if that's a true average or not. I mean, because we've had a very hard time finding that data. And thus, you know, we think you made a leap of faith in the proposed rule picking the 50%. You had to figure out something, it seemed like it might be a good idea at the time, but we're questioning it because, like I said, we've tried to independently verify that information and tried to look at those exposure levels, and the biggest problem with diesel studies as you know, is the lack of exposure measurements. Without knowing what people are exposed to it's very hard to classify the risks. That's a problem that you face in writing the proposed rule, it's a problem that we face in a practical end of trying to protect our worker. We're

just as interested in this as you are, and we have been wrestling with this issue on many fronts and don't have any clear answers. If you have other data that you used to develop your estimates, maybe you'd be willing to share that with us, and maybe we would all have a better understanding of how that calculation came to be.

MR. KOGUT: I think what data we have is certainly, you know, available. We tried to make it available in the proposal, and we'll certainly make any other data that we have available to anyone interested. You mentioned in your re-review of the six studies that I had mentioned in Albuquerque, you said that you looked, -- and I think you were talking about the Boffetta Study, where it said that, -- you know, you said that 40%, -- 46% or 47% of the miner category they estimated in the study as not having been exposed to diesel?

MR. KASZNIAK: They did not answer the questionnaire as to whether or not they had exposure to diesel.

MR. KOGUT: Right. So, it's unknown, --

MR. KASZNIAK: It's unknown for 44% of the study cohort whether they had any diesel exposure or not.

MR. KOGUT: Okay. And the relative risk though for miners, including that 44%, is that what it is?

MR. KASZNIAK: That's correct.

MR. KOGUT: For which the diesel exposure was uncertain, came out to be 2.67. You said that because it was uncertain for that 44% that that biased the study. Now, it seems natural to suspect that at least part of that 44% was not exposed to diesel?

MR. KASZNIAK: And that's the key area there.

MR. KOGUT: Right.

MR. KASZNIAK: If a significant portion of that 44% was not exposed, other lifestyle factors could have presented, and that's one of the key limitations of Boffetta material.

MR. KOGUT: Well, I think the way that it seems to be natural to interpret that, is that if up to 44% was not exposed to diesel, then yes, that biases the study result, but it seems to me that it biases it downward, because you have a certain fraction of that population that probably was not exposed to diesel, and yet, you have a relative risk of 2.67. If it were limited then, to only those workers that were exposed to

diesel, then one would expect the relative risk to be even higher than 2.67, isn't that right?

MR. KASZNIAK: I believe if you read the Boffetta Study closely you will find that his relative risk calculation excluded that 44% of folks who did not respond to the questionnaire with regards to diesel exposure. As I understood it.

MR. KOGUT: There was another section of the report that compared workers in general, across all classifications that were exposed to diesel, -- that reported exposure to diesel, as opposed to the ones that answered the questionnaire but were not exposed to diesel. I'll certainly go back and reread to see if, --

MR. KASZNIAK: And we'll try to clarify it in our final comments what, -- you know, what our concerns are there.

MR. KOGUT: Okay. You mentioned in your talk, and you also listed in the pre-hearing comments, you said that there were a number of studies that had negative results, that we didn't take into account in the proposal. Were you referring to the list on page 18 of your, --

MR. KASZNIAK: Yes, that's our preliminary comments, we'll have more with our final comments. We're

still actively researching in this area. As you know, literature is hard to come by sometimes, especially when you're depending on libraries for searching down data.

MR. KOGUT: Yeah. There's two of the papers that you have listed I found troubling that you listed them as, -- first of all, I found them real, -- I didn't understand what you meant that we didn't take those into account, since those studies are listed in the tables of study, -- there are forty-three that we did take into account. So, what did you mean by that? I mean, what did you mean by saying that we didn't take them into account?

MR. KASZNIAK: In terms of listing them in the table versus discussing them in the preamble. I mean, as you would know as well as I do, the studies that we referenced there, have minor cohort, -- or minor divisions sub-populations, if you will, as part of their analysis. And it seems to me that if you're trying to regulate miners then you need to, you know, realistically look at all the data that's related to miners and get away from railroad workers and dock workers and other people in terms of what is the effect, -- to help the effect in the mining industry. And so, we have been trying to compile that information

ourselves internally, 'cause like I said, we are interested in this issue. It's a very difficult task, we don't have a lot of people to devout to it, but we try our best to stay on top of the literature. And we believe there needs to be expanded discussion of all of the miner studies. Some of bee introduced in the record, obviously, post-publication of the proposal, the New South Wales work and stuff like that, that was added after that, and the Rich Coal Miner Studies and stuff like that. So.

MR. KOGUT: These studies that you listed on that page there, referenced, are not miner studies, they're just studies that you listed as being negative. And when we made the statement in the preamble that thirty-eight out of forty-three studies showed some positive association, we were including the negative studies in that forty-three, as well as the positive ones.

MR. KASZNIAK: Okay.

MR. KOGUT: But, also, one of those studies is Howe, et al, 1983, which you listed as being a negative study, but in our table we listed, -- are it's showing a relative risk of 1.2 for possibly exposed workers, and a relative risk of 1.35 for probably

exposed workers. So, --

MR. KASZNIAK: And relative risk less than two are not indicative of a disease, so.

MR. KOGUT: In an individual study. I might agree with that if you had one study that showed a relatively small relative risk. That wouldn't be very strong evidence of anything. But if you have a lot of studies that, --

MR. KASZNIAK: Obviously, that's where you and I have a point of disagreement, --

MR. KOGUT: Yeah. Okay.

MR. KASZNIAK: -- in the epidemiological circle.

MR. KOGUT: But that issue is addressed in the preamble. I mean, the issue of having multiple studies.

MR. KASZNIAK: We understand is addressed and we were just trying to tactfully point out that we disagree with it.

(Laughter)

MR. KOGUT: Another one that you have on that list of studies that you said that we didn't take into account was Wong, et al., 1985. And you say that that study, -- you listed it as a negative study because it

found a deficit for lung cancer in the overall cohort in a statistically significant deficient for lung cancer in the less than five year duration group. Now, as I'm sure you know, five, -- exposures of less than five years has been found in the general literature to not to be sufficient to show a response for lung cancer as an end point. And in fact, that study for the people with more than twenty years exposure showed a standardized mortality ratio uncorrected for healthy worker effect or anything that was greater than one. So, while it's not a significantly significant result, it's still, -- I don't think it's quite right to characterize it as negative result, do you?

MR. KASZNIAK: I'll have to go back and look at that. Right now those details of the lung study escape me. I can't remember forty-three different epidemiological studies and the effects of each one.

MR. KOGUT: Yeah, certainly. But I guess my question is, what are the criteria by which you considered these studies that you list to be negative studies?

MR. KASZNIAK: We will provide that within our final comments. We'll address that issue, --

MR. KOGUT: Okay.

MR. KASZNIAK: -- and our viewpoint, as to how we believe the Agency should consider that evidence.

MR. KOGUT: There's one other clarification that I wanted to ask you to provide. Do you want to ask if anybody else has questions while I'm looking for that?

MR. TOMB: I had two questions maybe I could ask you. If I can phrase them correctly. Area versus personal sampling, you mentioned that it's recommended to do personal sampling, and with respect to that comment would you envision the personal samples to be higher or lower than the area samples, if those measurements were made?

MR. KASZNIAK: That's a very interesting question. I mean, there are a lot of factors that need to be taken into account in terms of, number one, the position of the diesel exhaust on the unit compared to where the miner is working, and what the effect of the mine ventilation stratification is in the mine. It seems to me that that is a complex engineering, you know, ventilation-type issue, and I don't know if I could even answer that question for you, sir. I mean, --

MR. TOMB: Okay. I guess the other point

that you made is to do a lot more sampling in different types of mines, I think was one of your points that you discussed in your presentation. And the reason, -- I guess what I'm asking is, what is the reason, -- what's your main reason for that? Do you think that the average that has been established with 10% of the operations that we looked at underestimate or overestimates the conditions that would be out there?

MR. KASZNIAK: It's hard for me to speculate on the entire mining industry. I know primarily potash and salt. In salt and potash areas, based on our, you know, NCI work and the NIOSH study we are showing lower levels than the studies that you reference in the proposed rule. I don't know if that's because of the age or your data versus, -- and we worked together on putting some of together in outline. And so, I mean we both know what the results are. And I don't know what the ventilation is like. I don't get into all the other different mining commodities to see what their ventilation is like, and what their use of diesel is versus non-diesel, what their horsepower ratings or their engines are. So, it's very difficult for me to speculate in an area other than, --

MR. TOMB: What was your basis for that

recommendation? I mean, --

MR. KASZNIAK: The basis for that recommendation I think is the newer charge of lining the entire regulatory community. And if I was producing a commodity that you had not sampled, then I would question whether or not you had a right to deregulate me based on your limited sampling test.

MR. TOMB: Regardless of whether the contaminates that you're sampling for is a hazard or not a hazard?

MR. KASZNIAK: I don't quite understand?

MR. TOMB: Okay. Well, if diesel particulate is a hazard, okay, then, -- whether it's a feasibility limit I guess, or a health protection limit, okay, does that make a difference on where it's found, in the commodity of where it's sampled? I guess that's my question to get back at the reason that I would have to go out and sample all two hundred and fifty operations, which is what I assumed that you, -- what I sort of took from your, --

MR. KASZNIAK: Well, I didn't say you had to go out and monitor all two hundred and fifty, I said you need to, -- you need to have a representative number. And I certainly think you'd want to monitor all the

commodities being mined, --

MR. TOMB: Okay.

MR. KASZNIAK: -- to have good data to be able to promulgate a rule across the whole sector.

MR. TURCIC: What are some of the factors that you're, -- what I'm hearing you say is, that because of the limited number of samples there is also a potential issue on what is feasible in many of those deposits?

MR. KASZNIAK: That is a potential issue, yes.

MR. TURCIC: What factors would you factor in on determining the feasibility that may be, -- you know, that may, -- there may be a hole in the data with a lack of sampling?

MR. KASZNIAK: (No verbal response.)

MR. TURCIC: And if you'll just think about that and maybe, --

MR. KASZNIAK: Let me think about that and address it in our final comments. You're catching me off-guard here without being able to giving it any adequate thought.

MR. TURCIC: Yeah.

MR. KOGUT: I found what I wanted the

clarification about. On page 19 of your pre-hearing comments, in the middle of the page you said that "MSHA states that at least forty-three of the epidemiological studies have been published examining the relationships," and so forth. And then you go on to paraphrase MSHA's position that, -- or quote, the fact that thirty-eight of the forty-three studies showed any excess risk of lung cancer, it may itself be a significant result, even if the evidence in most of the thirty-eight studies is relatively weak. MSHA then explains in a footnote that a high proportion of positive studies is statistically significant, according to the Two-Tailed Sign Test (phonetic), and so forth. It's not clear whether you're taking issue with, --

MR. KASZNIAK: No, I was just laying the background for the issue and, --

MR. KOGUT: Are you disagreeing with MSHA's position about that, or are you agreeing, --

MR. KASZNIAK: We will clarify that in our final comments.

MR. KOGUT: Okay. And then one other clarification. You say that the two meta-analysis that we rely heavily on, the one by Buiatti, et al., and Lipsett and Alexeeff, don't address publication bias, --

or I suppose you mean sufficiently address, because both of them do go through an attempt at addressing it by means of funnel plots, and one of the two also looks at subsets of different studies organized in different ways, and tries to address it that way. In your post-hearing comments could you be a bit more specific about the shortcomings as you see them, --

MR. KASZNIAK: Sure.

MR. KOGUT: -- in the way that those two studies addressed publication bias, and what more they might have, -- what more could be done in order to address it, than what they did, in fact, do?

MR. KASZNIAK: All right. No problem.

MR. TOMB: Okay. Thank you very much, Mr. Kaszniak. I appreciate your input into the proposed rule.

MS. WESDOCK: Mr. Kaszniak, do you have more copies of that testimony?

MR. KASZNIAK: (Provides requested copies.)

MS. WESDOCK: Thank you.

MR. TOMB: Our next presenter is Mr. Henderickson from the Illinois Association of Aggregate Producers.

MIKE DUNN - KONKA WESTERN STONE

MR. DUNN: A little switch in the schedule here. My name is Mike Dunn, D-U-N-N. I'm the General Superintendent of Operations for Konka Western Stone, North Aurora Property. It is a underground mine about 40 miles west of Chicago. We started this mine in 1993, January of 1993. We employ eighteen people. We are a relatively small company, small operator, we produce about 1.1 million tons a year out of this mine.

In reading this proposed rule I have a few questions and comments for you. You express a concern about the additive effects on the body with regard to the typical gases associated with the mines, -- these aren't static gas necessarily, but from the results of the operation of the mine. For example, carbon monoxide, carbon dioxide, nitrous oxides, nitrous dioxide. And the possibility of diesel particulate matter being integrated with the equation that should result in below unity, unless you'd be in violation. The dpm acts differently on the body than these other elements. It is already pretty difficult at any point in time and any place within the mine, -- any time during the operations of maintaining, -- routinely maintaining below unity. Most of the time it's doable. We use pretty sound ventilation practices, we use low-

sulfur diesel and such. But, nevertheless, if you introduce another factor here, from some of the elements, -- considering some of the elements of mining daily activities, as I say, it is, -- it would be pretty common for any particular work area to become in violation with these additive effects being greater than unity.

So, when you consider the dpm, I question if you are mixing apples and oranges in this equation, because if, -- for the analogy, -- or simple analogy; I'm a nuts and bolts kind of guy, so bear with me here a second. If a doctor tells me, "Mike, you're way overweight, I need to put you on a strict diet. You're limited to 1500 calories per day". Now, if I say to him, "Okay, Doc, if it's going to affect my smoking," -- I don't smoke myself, but let's say I do. So, he says, "Well, if you're a smoker I have to consider those affects, so now I'm going to limit you to 1000 calories per day and three cigarettes". See, they're two very different effects on the body. I don't see how they could be looked upon as being additive. So, I question the logic there. That just escapes me.

Now, if I cite in here page 58156, there's a study cited here, Heinrich, Iwai, --

MR. TOMB: I'm sorry, what page was that, sir?

MR. DUNN: (58156).

MR. TOMB: Okay.

MR. DUNN: Under Roman Numeral III.2.c.i.B. Anyway, these studies in 1996 conclude,

"Therefore, dpm, rather than the gaseous fraction of diesel exhaust, is assumed to be the agent associated with an excess risk of lung cancer."

Now, these other elements, the Co, and Co2, these are all gaseous. Here, they are excluding the gaseous fraction of diesel exhaust, only looking at the dpm. So, that's why I really take, -- I really question using this dpm with the additive effects of these other gases associated with producing a mine.

MR. TURCIC: Could I ask you where you are arriving at the conclusion that the intent is to use the additive formula and include diesel particulate into the additive formula? Because that was never the intent, and I'm not aware of anywhere where that is even insinuated in the proposal.

MR. DUNN: But I wonder if it doesn't open

the door to such things? That's my concern. You start with this, --

MR. TURCIC: That is not the intent, and that never has been the intent.

MR. DUNN: -- and you go with this. But, I represent, -- I mean, you know, this is my interpretations and comments from this, okay?

MR. TOMB: Okay, that's your concern. Okay, I see where you're coming from.

MR. DUNN: All right. Now, like I said, I represent a relatively small operation. We only have 80 acres. We don't have several thousand acres. For mine property it's fairly small. We mine underground, so we are pretty limited. We stay within our property limits. If you look at the elements of mining, what you need to produce, a sizeable amount of rock to make the place economically viable, and you may not know, in hard rock the elements of mining can be a lot different than coal. You have drilling, the rock bolting, the rock scaling, explosives loading, mucking, so you have a number of elements there. Now, you need to produce or shoot, -- blast, a certain number of working phases a day to produce the tonnage. Now, rules of thumb here, if you have, -- we drill and blast, so if you have a particular

drill, drill jumbo, you need at least fifteen phases to keep that thing active. All these elements in the mining sequence, which is essentially like an assembly line because they follow each other, these elements, there's a few things to control here. One is, you want to keep the equipment fairly close to each other so the phases that you shoot at the end of every shift are, -- as close as possible, some close proximity. Now, equipment breaks down, you have delays, one element of the mining scheme gets done a whole lot quicker than typical, for various reasons. Equipment costs a lot of money, you have to keep the equipment and the people producing stone. And I might add that our average selling price for a cost per ton of stone is not $40.00 or $27.00 or anything like that, it is $5.15. So, keep that in mind, your economic considerations. It's $5.15 for a ton.

So, back to keeping the equipment and people busy, what are you gonna do? The foreman's gonna send the drill from here, to back over here, in very close proximity perhaps, to where the roofbolter is or the scales. So, now, we have very high potential for having a number of pieces of equipment in close proximity of each other. And you know what happens there. Really

the only other choice is perhaps shutting elements of the shift down early. That really impacts the efficiency; impacts the economic viability. Being a small mine you just do not have the kinds of options the much larger operation might have. A larger operation may have eighty phases to go through, -- spread out. They'll have numerous air splits; numerous vent shafts. We have one entry, which is a decline edit, we have one ventilation exhaust shaft. That's a suitable size as raise board through hard rock. The cost is significant. If we have to increase our ventilation two or threefold, we're talking about additional shafts, or larger shafts, which would have to be filled and blasted. And the price of construction goes way up with that.

Few other comments. We did participate in MSHA tech support gathering data for the dpm concentrations. I'm sure you're all familiar with this (indicating) particular graph here of all the sites, this is the metal/nonmetal mines. I believe we're (K). Can't swear to it, but it looks like the data they gathered matches (K) here. Which bears real well when you consider these others. I'm kind of happy with that. But if you look at the graph and you examine the range of data at any of these particular mines, --

MS. WESDOCK: Excuse me, Mr. Dunn. Could you read the name of that table, the numbers for the reporter.

MR. DUNN: The page number?

MS. WESDOCK: The table.

MR. TOMB: The figure.

MS. WESDOCK: The figure. That figure number.

MR. DUNN: Oh. Okay, here it is.

MS. WESDOCK: Thank you.

MR. DUNN: Figure III-2. Yeah. So, --

MR. TOMB: What's the name of your mine, sir?

MR. DUNN: The name of the mine?

MR. TOMB: Yeah.

MR. DUNN: It's the Galena Plattville, of Konka (phonetic) Western Stone.

MR. TOMB: I was just trying to check and see if that's your name.

MR. DUNN: Well, it's supposed to be anonymous anyway, so I mean, I don't care.

MR. KOGUT: It's public information, and we provided that to the, --

MR. DUNN: The point is we're down here.

MR. TOMB: Okay.

MR. DUNN: Compared to everybody else. But if you look at the range of data for each mine, just roughly, you might say the deviation from the mean is greater than 300 micrograms per cubic meter. Okay. Now, if you go to a maximum of 160 micrograms per cubic meter, it's the limit. Now, you're talking about a range of zero, which is the lowest you can go, zero, to 160, and that's a pretty tight tolerance. Do you see what I'm getting at?

MR. TOMB: Well, just let me clarify one thing. With respect to that table you'd be looking at 200, not 160 for dpm.

MR. DUNN: Even so, okay, 200.

MR. TOMB: Yeah. That's okay. You're looking at it.

MR. DUNN: Okay, you're right. So, if the variation within any particular mine of the dpm, -- variation of the dpm that you could measure, is greater than 300 micrograms per cubic meter, now you're going, -- if 200 is the limit, so it's 200, that's a very tight tolerance. That's why I say, on any particular day, any particular time or place within the mine an inspector could come in there and test and you're in violation, period. It's a very tough thing.

If the analogy were to be driving down the highway, the speed limit is 55 miles an hour and the state trooper to himself says, "Well, if I allow a tolerance of 5 miles an hour, how many people am I gonna pull over at the end of the day?" He's going from (55) to (60), anything above that, he's gonna nail you. As opposed to maybe more realistic, -- I don't want to say that. Maybe another state trooper who might say, "Well, inaccuracies of the speedometer; how much traffic is going down the lanes, et cetera, et cetera, I'm going to allow (68). Anything over (68) that I clock, I'm gonna pull the guy over". And I think there's gonna be a whole lot of difference in the number of people each of these state troopers pull over. It's the tolerance that we're looking here, the limits. And, of course, that's in the pretext of safety, what they're doing.

Now, the one last comment I have, is there was talk earlier about the 200 micrograms per cubic meter limit is the perceived limit of technology, -- I guess the highest allowable level that technology can probably achieve. When I look at this report though, and I look at Figure III-3, following the other figure, this is the dpm measured, -- the ranges measured in surface mines, and it sure looks to me that the highest dpm here is

curiously enough right around 200 dpm. So I contend that the driving force is, "Let's make the underground mines have the same limits of exposure to their workers in diesel equipment as the surface mines". That's how I read this report. "Let's make it even." Ignoring that a mine is a confined space. Ignoring that the air quality, -- the change of air cannot match what you have on the surface. But this is, -- one of the major questions to my mind is, is this indeed, where the 200 micrograms per cubic meter comes from, regardless of the rhetoric about the technical achievements, -- technological achievements? Or is it just a great coincidence that the surface mines experience this exposure of (200)? And that's the comments I have.

MR. TOMB: Were you going to make a presentation, too?

DAN FOLTYNIEWICZ

AGGREGATE PRODUCERS RISK MANAGEMENT ASSOCIATION

MR. FOLTYNIEWICZ: My name is Dan Foltyniewicz, and that's spelled, F-O-L-T-Y-N-I-E-W-I-C-Z.

MR. TOMB: Now, wait a minute.

MR. FOLTYNIEWICZ: It's probably going to be longer than my presentation.

(Laughter)

MR. TOMB: Will you repeat that please? I'm sorry.

MR. FOLTYNIEWICZ: D-A-N. It's F as in Frank, O-L-T as in Tom, Y-N-I-E-W-I-C as Charlie, Z as zebra.

MR. TOMB: Okay.

MR. FOLTYNIEWICZ: And you addressed the one concern that we had. I'm with the Aggregate Producers Risk Management Association, and I'm the Risk Manager. And that was the concern about the cumulative additive effect. So, that was a big part of it. But at the same time I'd like to address the fact that the Salt Institute, Morton, IMC Global, that they did an excellent job presenting a lot of the material that we were concerned about being presented. Certainly one thing as a risk manager, the concern that we have was that the health and safety for a miner at a small operation would be the same things that would be in concern for the health and safety at a large operation. Yet, at the same time, if a rule is bad for one, chances are it's bad for the other. Certainly, we don't want to see jobs eliminated because of an economic factor based on incomplete data or research. I concur with the

gentleman about the twenty-five samplings that were tested. Because if I'm doing my doctoral study I know that if I'm doing a random sampling and there are two hundred and plus samples that I must take, and I take a random sample of only 1/10 of that for my doctoral thesis, how valid is that study? So that's a consideration that hopefully will be entering into play here.

Also, for those people that may lose jobs based on this rule, will there be outreach, out-job-placement for those people that do lose jobs? Small mines are affected. And certainly a consideration is cost per unit. From a small operation, our cost per unit can be very affected by what comes into play. If it's new machinery, if it's additional testing, whatever.

So, finally, hopefully this rulemaking process that MSHA will consider, that there is outside influence from foreign markets that may take over based on the decision, what MSHA comes up with. And that concludes it.

MR. TOMB: Okay. Did you say your name was Mike? I'm sorry.

MR. DUNN: Mike, yes.

MR. TOMB: Mike? Mike, okay. I didn't write it down. First of all, I'd like to comment. One thing with respect to, -- I don't think you got your question answered. But the underground level that was proposed, okay, was not based on what levels are in surface mines. All right. And I think you've been here during the whole meeting, and as I said before, the Agency attempted to look at the feasibility of a number for underground mining operations. And that's what the Agency has proposed as, -- they felt in looking at, -- what is in here, the rationale that's in here, is what the Agency came up with as a proposed feasible level that can be achieved. Now, we've heard a lot of comments today on, -- addressing whether that level is a feasible level or not, and I think we have to look at that data.

I'd like to ask you a couple of questions though, if you don't mind?

MR. DUNN: Okay.

MR. TOMB: I think we did, -- if I remember, I think you said you were at the Galena Mine?

MR. DUNN: Galena Plattville, yes.

MR. TOMB: And I think we, -- that was one of the mines where we collected samples to evaluate the

Estimator that we used, -- that's discussed in here. But can you tell me, like, how many men you have in your operation?

MR. DUNN: With supervision and such, it's eighteen.

MR. TOMB: Eighteen people. And how many pieces of equipment, -- how many miners? I'm sorry.

MR. DUNN: Oh, miners, -- well, now we get into, -- we actually have four miners during the day that actually mine.

MR. TOMB: Okay.

MR. DUNN: We have three, four, -- and a supervisor on the night shift that produce the rock, two support people are mechanics, and they go up and down.

MR. TOMB: You're talking about four people a shift?

MR. DUNN: In and out of the mine. Yeah, who actually are, you know doing the drilling and blasting and such, yeah.

MR. TOMB: Okay. How many vehicles, -- how many diesel engine vehicles do you have?

MR. DUNN: Well, we have, -- actually there's quite a bit. We don't have anything that's electric. We have two drills and one bench drill. Let me just

kind of enumerate here, I'm thinking. Twenty-one, I guess. Twenty-one pieces.

MR. TOMB: Okay. So, you have twenty-one pieces. And if I remember correctly, -- and I haven't looked at this for awhile, but all of that equipment doesn't operate at one time, does it?

MR. DUNN: No. No, because we have three, -- four pieces would be for the night shift, --

MR. TOMB: I mean the way you cycled it, it seemed to me if I remember from when we went through that that all those, --

MR. DUNN: Well, not necessarily. I mean, out of these, -- what did I say, twenty-one, you've got four particularly running the night shift, so that goes out. The others are run at the same time.

MR. DUNN: Oh, they're all running on the, --

MR. DUNN: All running at the same time, with the exception of I'll say two others, which are back up machines, primarily.

MR. TOMB: Okay.

MR. DUNN: They have run, but not on a routine basis with these others.

MR. TOMB: Now, approximately how much air do you have?

MR. DUNN: We have 230,000 cfm.

MR. TOMB: Okay.

MR. DUNN: And we have, --

MR. TOMB: And your levels are quite low if (K) was a value there.

MR. DUNN: We have a very, -- it's efficient in the sense that if you go by cfm per horsepower it's really much lower than your one or two hundred.

MR. TOMB: Yeah.

MR. DUNN: Or (200), anyway.

MR. KOGUT: Can you tell me the name of the mine again, 'cause maybe I can actually identify, --

MR. DUNN: Galena Plattville.

MR. KOGUT: It's mine V as in Victor.

MR. DUNN: (G)?

MR. KOGUT: (V), yeah.

MR. DUNN: All right. Well, there, -- I thought our range was better than that, but that's okay.

MR. TOMB: Actually, they're better.

MR. KOGUT: No, that's not right. No. I'm sorry, that's not right. It's Mine N, as in nose. It's still good.

MR. TOMB: Okay. Do you have any other questions? I really thank you for the information here.

MR. DUNN: My pleasure.

MR. TOMB: I appreciate your coming. And I also appreciate your working with us to get information on your mine, too.

MR. DUNN: Well, it benefits us, too. I'd do it anytime.

MR. TOMB: Thank you. Our next presenter will be, -- and I have a hard time here. We have one more person to go, which is ten minutes. Mr. Dawn, -- is it Segman (phonetic)?

MR. SEGMAN: My comments have already been addressed this morning.

MR. TOMB: Okay. And Mr. Shyet (phonetic), you want to make a presentation?

MR. SHYET: No, we'll supply comments for the record later.

MR. TOMB: Okay. Very good. Okay, well that concludes all the speakers we have listed here. Is there anybody else in the audience that would like to make a presentation?

(No Verbal Response)

MR. TOMB: Okay. At this time then we'll go off the record and we'll take a break for lunch. And then, what we plan on doing is coming back to see if

anybody, -- we'll come back in an hour to see if anybody else shows up that would be coming for the afternoon to make a presentation. 1:30, we'll come back at 1:30.

(Whereupon, at 12:30 p.m., the hearing was recessed, to reconvene this same day at 1:40 p.m.)

MR. TOMB: Okay, we're gonna go back on the record now. Our next presenter will be Mr. Howard Stever, from Mississippi Lime Company. Is that right, Stever?

MR. STEVER: Stever.

MR. TOMB: Stever, okay. Thank you.

HOWARD STEVER - MISSISSIPPI LIME COMPANY

MR. STEVER: My name is Howard Stever, I'm the Manager of Mine Engineering for Mississippi Lime Company.

MS. WESDOCK: Is that turned on? Is that on, do you know?

(Pause)

MR. STEVER: I'll just hold it. Can you hear me?

MS. KING: Would you spell your name, please?

MR. STEVER: My last name is S-T-E-V-E-R. Again, I'm the Manager of Mine Engineering with the Mississippi Lime Company. We're an underground

limestone producer, for the purpose of making lime, in St. Genevieve, Missouri. And I'd just like to make a couple of comments about engine conversion. That was touched on briefly this morning as a way of trying to meet the new proposed standards. We have done some research and in some of the conversation this morning it was touched on, the possibility of getting a new engine and just sticking that in place. And I guess I'd just like to say something about some experience that we had this last year sort of along those lines. We use large 50 ton rock trucks underground in our limestone mine. The model that we have primarily, is a Pay Hauler 350C. It's a 50 ton rock truck. We wanted to be a little bit proactive in trying to address the needs that could come to pass under the new regulations. And it was decided that we would put some money in our capital budget to try and do an engine conversion, to take an older Cumming's engine and replace it with either a Caterpillar 3408E or a Cumming's QSK-19. We received quotations from our local suppliers that ranged between $85 and over $100,000.00 to complete this project. As we got into and learned more about it, we read about the proposed approval process where the new engines would need to be approved by MSHA. In talking with both

companies and Caterpillar, neither of these two engines that I've spoke about have been approved at this point. And in talking with the manufacturers from these two companies they seem to be a little bit perplexed by this possible approval process. Evidently, the two engines have been approved by the EPA, and they've asked me, and, of course, I've asked them to go back the other way and talk to their people as to whether or not they would be interested in applying for an MSHA approval if one is needed.

But at this time, we had money approved in our budget and we are not going to go forward with this project because of uncertainty related to the approval process. There is an engine, -- one engine on the approved list, it's the Detroit Diesel DeDeck (phonetic) 8V2000, which is in the same size range as the engines that we are using in our trucks. But in my conversations with the people at the Pay Hauler Corporation they have never used this engine in one of their trucks before, so they told me it would be somewhere between a year and a half to two years before they would have opportunity to develop all the engineering work and the electrical harnesses and things that are necessary to make this type of a conversion.

So, we're in a situation here where we kind of want to get a jump on things and get a little bit of a start in trying to improve our situation underground, and we're sort of stifled by the process as it exists right now.

We've also talked with Caterpillar about some older Cat trucks that we have, four of them that are used underground, and got an answer from them that they didn't feel that the number of trucks that would be involved in our case, and possibly in the industry, would justify the engineering work that would have to be done to support conversion from the old engine to a newer, more cleaner burning engine. And we got basically the same answer from people at Kamatsu-Dresser, when we talked to them about the engines that we have in the Dresser 570 Loaders that we use underground. So, I just wanted to pass that on to you, that especially with some of the larger equipment; these engines are around 650 hp; our mine is a little bit unique in that we do a lot of the same things underground that people do in surface quarry. We have that same type of equipment. So, we're faced with some challenges there, and we wanted to get an early start on it and we've kind of run into some problems. So, I'm not sure how that relates to all of this, but the engine

conversion issue is one that I think is going to need a lot of work. That's all of my comments.

MR. TOMB: Can I ask you one question?

MR. STEVER: Yes sir.

MR. TOMB: Out of that $85 - $100,000.00, what was the price out of that, do you know?

MR. STEVER: A new engine would be $40 - $45,000.00.

MR. TOMB: Forty to $45,000.00.

MR. STEVER: Yes sir.

MR. TOMB: How many of these vehicles do you use, -- do you have?

MR. STEVER: We have nine Pay Hauler Trucks and five, 570 Loaders.

MR. TOMB: Any other questions?

(No Verbal Response)

MR. TOMB: Okay. Thank you very much for your input. Is there anybody in the audience that would like to make a presentation at this time?

(No Verbal Response)

MR. TOMB: Do you want to start the process over again, Mr. Bertram?

MR. BERTRAM: I'll pass.

MR. TOMB: Okay. I guess we'll go off the

record at this point.

(Whereupon, at 1:45 p.m., the hearing was recessed, to reconvene this same day at 3:05 p.m.)

MR. TOMB: I just want to say that we're back on the record at 3:05 and nobody else has showed up to make a presentation relative to the Proposed Rule for diesel particulate exposures for underground metal/nonmetal miners. So the record is being closed. We're here in St. Louis. Thank you.

(Whereupon, at 3:05 p.m., the hearing was concluded.)

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REPORTER'S CERTIFICATE

I, DEBORAH CARTER, reporter, hereby certify that the foregoing transcript consisting of 146 pages is a complete, true, and accurate transcript of the testimony indicated, held on May 25, 1999 at The Holiday Inn Hotel, 811 North Ninth Street, St. Louis, Missouri

In the Matter of: The Public Hearing Re: Diesel Particulate Matter For Metal and Nonmetal Mines; Proposed Rule

I further certify that this proceeding was recorded by me, and that the foregoing transcript has been prepared under my direction.

Date: May 25, 1999

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